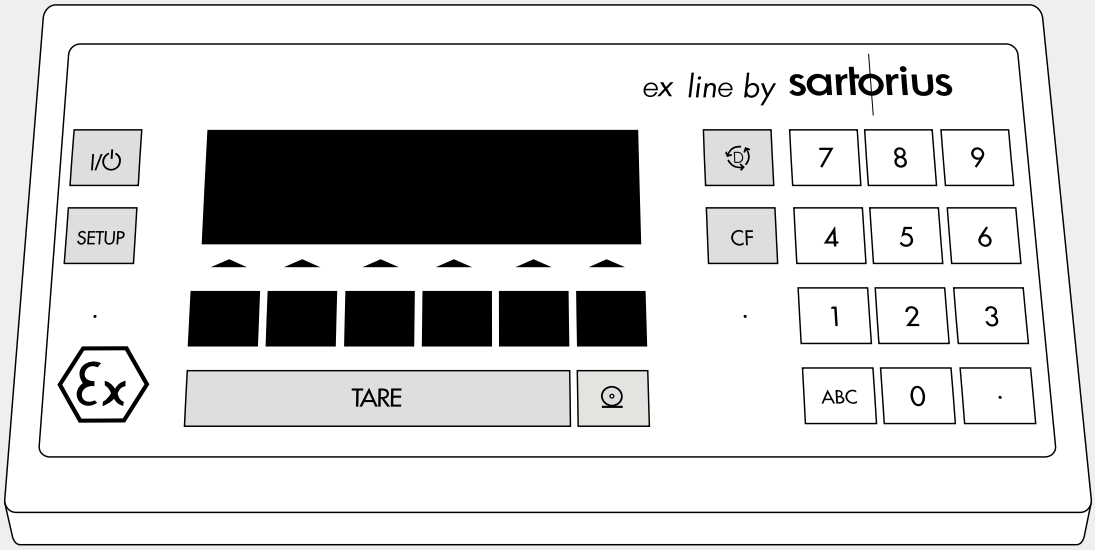
98648-009-40

Sartorius Factory Series

Industrial Weighing Technology

FCT01-X
Modular Weighing Terminal for Hazardous Areas/Locations
Operating Instructions



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Symbols

The following symbols are used in these instructions:

● indicates steps you must perform

○ indicates steps you must perform only under certain conditions

> describes what happens after you have performed a certain step

– precedes an item in a list

⚠ indicates a hazard

Note Concerning Verified Scales Approved for Use as Legal Measuring Instruments in the EU*:

The notes in this manual that refer to scales verified for use in legal metrology apply only if the scale has been approved for verification. For more information, contact your local Sartorius office or dealer.

* including the Signatories of the Agreement on the European Economic Area

Hotline:

For advice on the use of these applications, just call or fax your local Sartorius office. For the address, please visit our Internet website at: www.sartorius.com

Operating Design

You can connect any standard strain-gauge load cell or analog IWA, IU or IF-series weighing platform to the FCT01-X terminal. All cables are fitted with cable glands or threaded round connectors for network connections.

In addition to the power jack, your scale also has an interface port for connecting additional devices such as a printer, computer, or universal remote control switch, for example.

Operation of the terminal follows a uniform philosophy, which is described below.

The term "scale" as used in this manual indicates an FCT01-X terminal connected to a weighing cell.

Combination of Several Applications

You can combine the use of various application programs to meet your more complicated requirements.

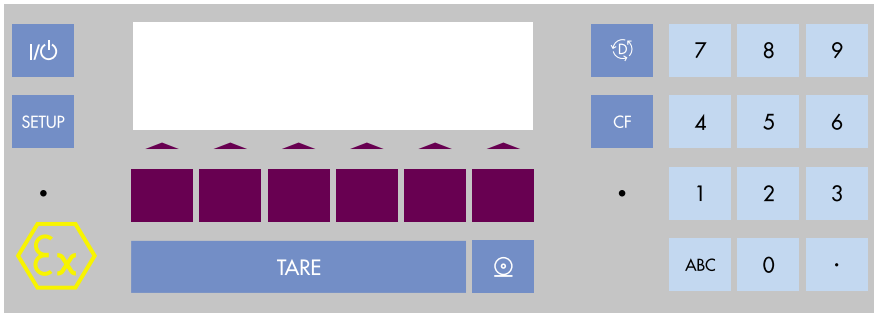
To select application programs one after the other, press [⏱] (toggle function).

Keys

You can operate the scale either using the keys on the terminal or from a connected PC. This manual describes operation using the keys on the terminal.

Labeled Keys

These keys always have the function indicated by their label, but are not available at all times. Availability of their functions depends on the current operating status of the scale and the menu settings.



Meaning

[ABC] Alphabetic keys
Please see section on "Text Input"

[I/⏻] On/off key
Turns the scale on and off or switches it to the standby mode

[SETUP] Menu settings
Accesses and exits the Setup

[⏱] Toggles to the next application program

[CF] Clear Function
Deletes keypad input
Interrupts a calibration and adjustment routine in progress
Quits application programs

[⏲] Print key
Outputs displayed values or data logs to the interface port

[·] Enters a decimal point

[1] … [9] [0] keys
See the section on "Numeric Input"

[TARE] Tares the scale

Numeric Input

To enter numbers: press [1] … [9] [0] [·]

To store numbers entered:
press the corresponding function key directly below the soft key label

To delete an entire numeric input digit by digit:
press the [CF] key

Text input

- To enter numbers: see the section on "Numeric Input"
- To enter letters or characters: press the [ABC] key

> Letters are displayed in the bottom line for selection

- To select a different letter: press the corresponding soft key to change the letter shown
- To select the letter/character shown: press the corresponding function key below the soft key label

> The selected letter is shown on the display

○ Enter the next letter/character, if desired, as described above

○ To exit the letter input mode e.g., if the last character entered is a letter): press the [ABC] key

- To store a word: press the corresponding function key (soft key), such as I D
- To delete an input character by character: press the [CF] key
- To delete user data: enter [·] or a space "■" and save

Function Keys (Soft Keys)

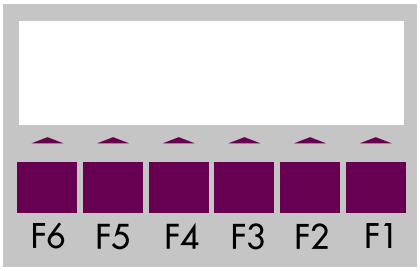
The current function of soft keys is indicated in the bottom line of the display (footer).

Texts (abbreviations) or symbols can be displayed as in the example shown below:

Texts (Examples)

isoTST:
Start calibration/adjustment
S ID: Save ID

The function keys are numbered from right (F1) to left (F6).



Symbols

The bottom line shows the following symbols:

- **<<** Back to the initial state (in the Setup menu: exit Setup)
- **<** Go to the higher selection level
- **>** Show sub-items under the active item
- **^** Move upward in the input/output window
- **v** Move downward in the input/output window
- **↵** Set the selected menu parameter

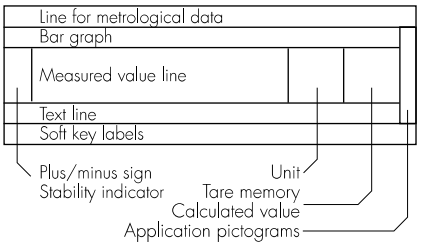
There are basically two different types of displays:

– display for weights and calculated values

– display for menu parameter settings (Setup)

Operation

Display for Weights and Calculated Values



Line for Metrological Data:

When the scale is used in legal metrology, the following metrological specifications of the weighing cell are shown here:

- **Max** Maximum capacity (upper range limit) of the scale
- **Min** Minimum capacity (lower range limit) of the scale (verified models only)
- **e** Verification scale interval (verified models only)
- **d** Readability/scale interval

On standard scales, only **Max** and **d** are displayed.

Bar Graph:

The bar graph indicates how much of the scale's capacity is "used up" by the current load; during checkweighing, it indicates the control limits.

The following symbols may be displayed:

- **0%** Lower load limit
- **100%** Upper load limit
- Bar graph showing 10% intervals
- **–** Minimum for checkweighing
- **=** Target for checkweighing
- **+** Maximum for checkweighing

Plus/Minus Sign, Stability Symbol:

A plus or minus sign (**+** or **–**) is shown here for a weight (or a calculated value, such as that for counting), or the **O** symbol indicating that a verified scale has been zeroed or tared.

Line for Measured Values:

This area shows the weighed or calculated value and the alphanumeric input.

Note Concerning Verified Scales Approved for Use as Legal Measuring Instruments in the EU*:

For verified scales that have a verification scale interval **e** not equal to the scale interval **d**, the last digit on the display is bordered.

* including the Signatories of the Agreement on the European Economic Area

Unit and Stability:

When the scale reaches stability, the weight unit or calculated unit is displayed here

When the ⚠ symbol is displayed here, the value indicated in the readout is not valid for legal metrology.

Tare Memory, Calculated Values:

The symbols displayed here indicate when there is a value in one of the tare memories or when the value shown is a result of calculation rather than direct measurement.

These symbols are as follows:

⚠ Calculated value

NET 1 Net value/tare memory
NET 2 used by an application program (e.g., formulation, second tare memory)

Application Pictograms:

The pictograms displayed here indicate the application(s) selected. The pictogram is displayed inversely (white on a black background) when the corresponding application is active.

For example, the following symbols may be displayed simultaneously:

- The counting application is active
- Checkweighing is also active
- Print
- Data record

Text Line:

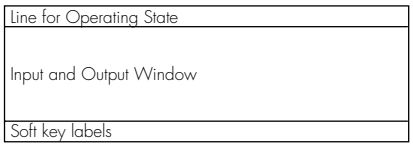
Additional information is displayed here (e.g., operator guidance prompts, name of the active program, etc.)

Soft Key Labels:

The current functions of the soft keys above the function keys (arrow keys) are indicated here; during calibration/adjustment, this line shows up- and down-arrows (^ and v) for selecting calibration and adjustment functions.

Display for Menu Parameter Settings (Setup)

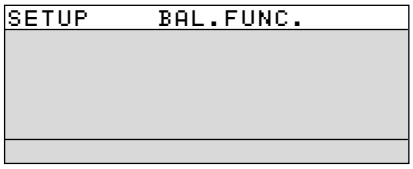
This display is divided into three sections.



Status Line:

The status line of shows the function of the display screen page. In the Setup menu, the current menu "path" is shown here.

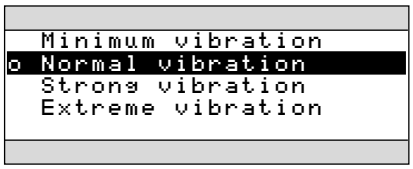
Setup Menu Example: "Scale functions"



Input and Output Window

This window contains either detailed information (e.g., on the active application) or a pick list. A selected item is displayed inversely (white characters on a black background). You can also enter information in an active field in this window using the alphabetic and numeric keys.

Setup Menu Example, "Device parameters, Adapt filter":



The following symbol in the input and output window may be displayed:

o this symbol marks the saved menu setting

Soft Key Labels

See the description "Function Keys (Soft Keys)" on the previous page

To set a parameter:

- Press the ^ or v soft key repeatedly until the desired setting is selected (displayed inversely)
- Confirm your selection: press the ↵ soft key

To change the numeric value of a parameter:

- Press the ^ or v soft key repeatedly, if necessary, until the desired setting is selected (displayed inversely)
- Enter a new value or character: use the 0 1 … 9 . or the ABC key and enter the desired letters
- Confirm your selection: press the ↵ key

To exit Setup: press SETUP or the << soft key

Input

Foot Switch Input

You can connect a foot switch to the terminal and use it to perform a given keypad function (such as CF or TARE).

PC Input

You can use a computer to control the functions of the scale via the interface port (see the "Data Output Function" section in the chapter entitled "Operating the Scale").

Data Output

The FCT01-X is equipped with an interface port for connecting one of the following devices:

– Printer*

– Peripheral device (such as a PC)*

* Zener barrier required (see "Accessories")

Printer

In the scale Setup menu you can configure the printer output format to meet your requirements, with or without IDs, including ISO/GLP requirements.

ISO: International Organization for Standardization

GLP: Good Laboratory Practice

You can have printouts generated automatically or by pressing ⊙. You can also configure whether or not generation of a printout is dependent on stability or time parameters.

See "Data Output Functions" in the chapter entitled "Operating the Scale" for a detailed description.

Interface Port

You can connect a different peripheral device, such as a PC, to the interface port rather than a printer.You can control both the weighing cell and the terminal through a connected PC. With this feature, request messages are sent via the interface to initiate functions in the weighing cell and the terminal. Some of the functions generate response messages.

See "Data Output Functions" in the chapter entitled "Operating the Scale" for a detailed description.

Error Codes

If you press a key that has no function, or which is blocked at a certain point in an application program, this error is indicated as follows:

– a double beep is sounded as an acoustic signal if the key has no function

– a double beep is sounded and the message "No function" is displayed in the text line if the key function is not available at that time

The response to an operator error is identical in all operating modes. See the chapter entitled "Error Codes" for a detailed description.

Storing Settings

Saving Parameter Settings

The settings configured remain stored in the scale's non-volatile memory. In addition, you can reload the factory settings.

Saving Settings

Under "Setup: Device parameters: Password" you can assign passwords that block access to:

– Scale functions

– Device parameters

– Application parameters

– Printout

– Factory settings

Configuring the Scale

Purpose

You can configure your FCT01-X terminal to meet individual requirements by entering user data and setting parameters in the Setup program.

The Setup menu contains the following submenus:

- Balance/scale functions
- Device parameters
- Application parameters
- Printout
- Device information
- Language
- Factory settings

Configuring the Scale for Use in Legal Metrology

Set the menu access switch as described below to configure the following functions for use of the scale in legal metrology:

- Display: Verification scale interval **e**; lower limit of the weighing capacity **Min**
- External calibration blocked

Preparation

● Remove the cap from the back of the scale housing

● Move the switch to the left.

> When the switch is in the left-hand position, the Setup menu is locked and the scale can be used in legal metrology

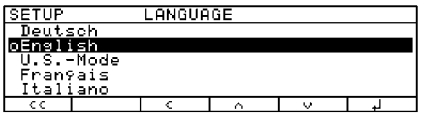
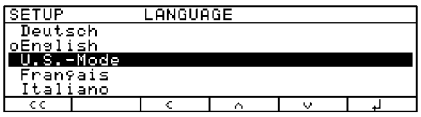
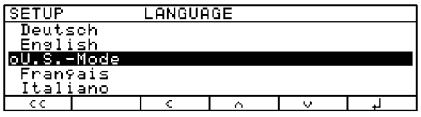
> When the switch is in the right-hand position, the menu is accessible

Setting the Language

You can choose from 5 languages for the information display:

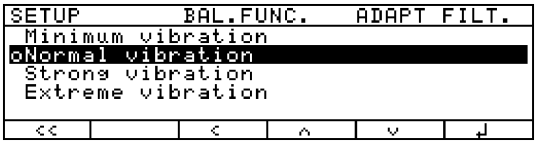
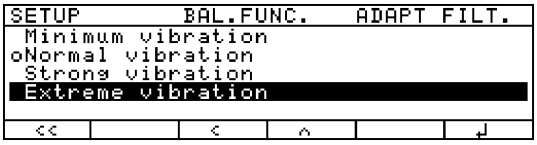
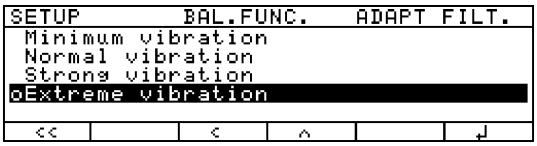
- German
- English (factory setting)
- English with U.S. date/time format
- French
- Italian
- Spanish

Example: Settting the Language to "U.S. Mode"

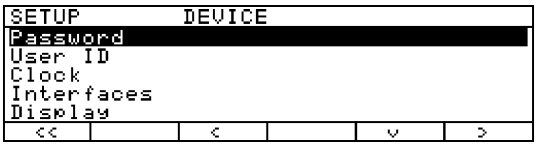
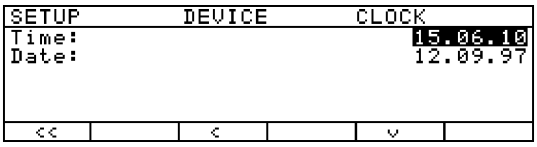
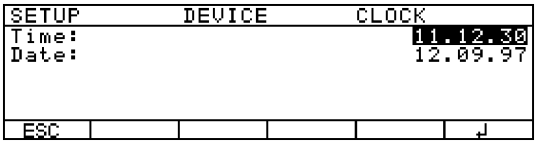
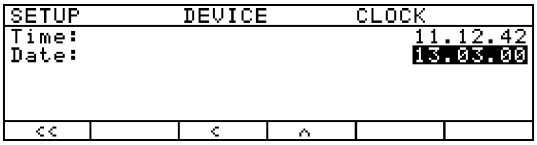
Step	Press key (or follow instructions)	Display/Output
1. Select "Setup" menu	SETUP	
2. Select "Language" and confirm	repeatedly press v soft key, then > soft key	
3. Select "U.S. mode"	^ soft key	
4. Save language	↵ soft key	
5. Exit the Setup menu	<< soft key	

Navigating in the Setup Menu (Examples):

Example: Adapting the scale to "Extreme vibration"

Step	Press key(s) (or follow instructions)	Display/Output
1. Select Setup menu	SETUP	
2. Confirm "Scale functions"	> soft key	
3. Select menu item "Adapt filter" and confirm	v, then > soft key	
4. Select menu item "Extreme vibration"	v soft key	
5. Confirm menu item "Extreme vibration"	↵ soft key	
6. If required, select further menu items	< v ^ > soft keys	
7. Save setting and exit Setup Menu	<< soft key	

Example: Entering the time and date

Step	Press key(s) (or follow instructions)	Display/Output
1. Select Setup menu; select "Device parameters"	SETUP , then ˅ soft key and > soft key	
2. Set clock	press ˅ repeatedly, then press >	
3. Enter the time	1 1 · 1 2 · 3 0	
4. Set the time according to your local clock	↲ soft key	
5. Enter the date	1 3 · 0 3 · 0 0	
6. Store the date	↲ soft key	
7. Enter other data, if desired	< ˅ ^ > soft keys	
8. Exit Setup menu	< < soft key	

Setting the Scale Functions (BAL.FUNC.)

Purpose

This menu item enables you to configure the scale functions, i.e., to meet individual requirements by selecting predefined parameters in the Setup menu. You can block access to the menu by assigning a password.

Features

The scale functions are combined in the following groups (1st menu level):

- Calibration/adjustment
- Adapt filter
- Application filter
- Stability range
- Stability delay
- Taring
- Auto zero
- Weight unit 1
- Display accuracy 1
- Zero range
- Zero range at power on
- Tare/zero at power on
- Factory settings: only wgh. param. (only the scale functions)

Factory Settings

Parameters: The factory settings are identified by the symbol "o" in the list starting on the next page.

Preparation

Show available balance/scale functions:

● Select Setup menu: press the SETUP key

> SETUP is displayed

● Select "Scale functions": press the > soft key

If you already assigned a password:

> The password prompt is displayed

○ If access is blocked by a password: enter the password using the numeric/alphabetic keys.

○ If the last character of the password is a letter: conclude input by pressing ABC

● Confirm your password and have the scale functions displayed: Press the ↵ soft key.

> Scale functions are displayed:

○ To select the next group: press the v soft key (down arrow)

○ To select the previous item of a group: press the ^ soft key (up arrow)

○ To select the next sub-item within a group: press the > soft key (right arrow)

○ To select the previous group: press the < soft key (left arrow)

○ To confirm: press the ↵ soft key

Extra Functions

● Exit the Setup menu: press the << soft key

> Restart your application

● Print parameter settings:

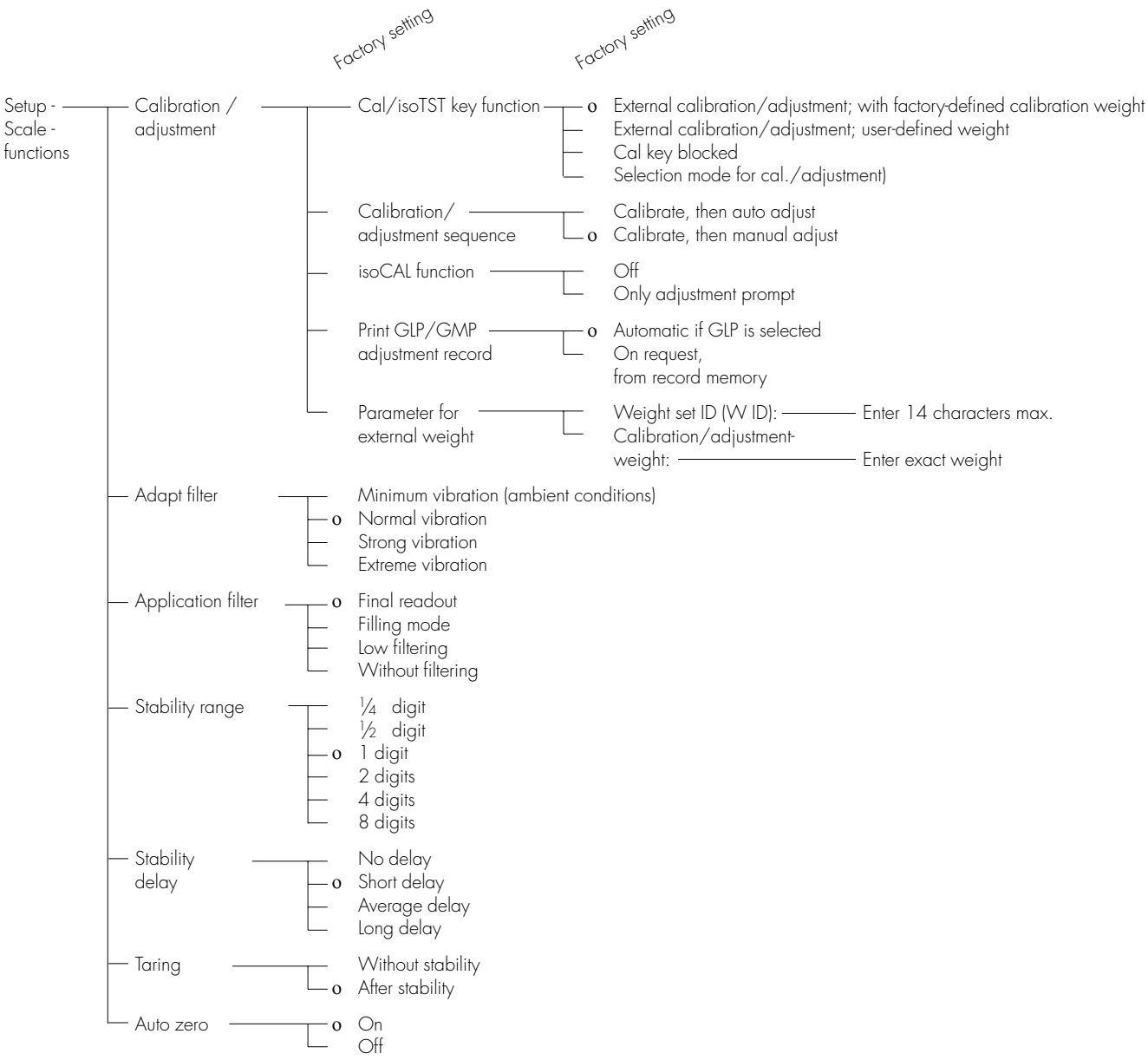
– When the balance/scale functions are displayed, press ⊙

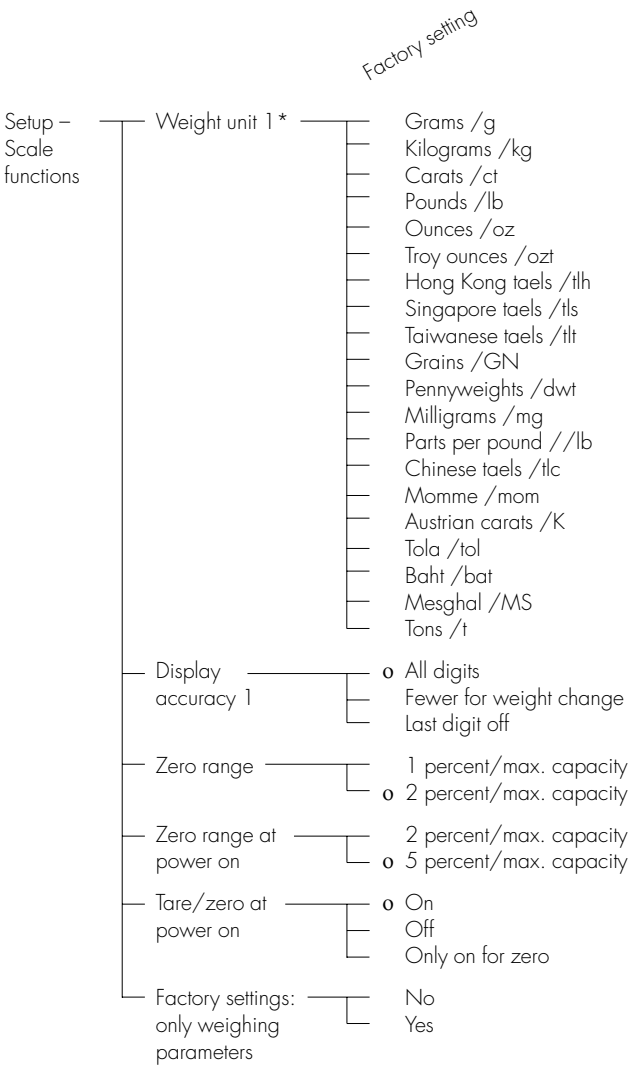
> Printout (example)
Texts with more than 20 characters are cut off

```
SETUP
    BAL.FUNC.
--------------------
Calibration/adjustm
  CAL/iso TST key fun
  Internal cal./adju
  Cal/adjustm seq
Cal. with adjustm au
.
  isoCAL-function
                  Off
  Start autom. adjus
              isoCAL
  Print GLP/GMP adju
Automatic if GLP is
selected
  Parameter for exte
   Wt. ID (W ID):

   Cal./adjust.-wt:
         5000.00 g
 Adapt filter
    Normal vibration
 Application filter
         Filling mode
 Stability range
   2 digits
 Taring
    After stability
Auto zero
                  Off
 Weight unit 1
           Grams /g
```

etc.


Factory setting
Factory setting
Setup - Scale - functions
Calibration / adjustment
Cal/isoTST key function
o External calibration/adjustment; with factory-defined calibration weight
External calibration/adjustment; user-defined weight
Cal key blocked
Selection mode for cal./adjustment)
Calibration/ adjustment sequence
Calibrate, then auto adjust
o Calibrate, then manual adjust
isoCAL function
Off
Only adjustment prompt
Print GLP/GMP adjustment record
o Automatic if GLP is selected
On request, from record memory
Parameter for external weight
Weight set ID (W ID): Enter 14 characters max.
Calibration/adjustment-weight: Enter exact weight
Adapt filter
Minimum vibration (ambient conditions)
o Normal vibration
Strong vibration
Extreme vibration
Application filter
o Final readout
Filling mode
Low filtering
Without filtering
Stability range
¼ digit
½ digit
o 1 digit
2 digits
4 digits
8 digits
Stability delay
No delay
o Short delay
Average delay
Long delay
Taring
Without stability
o After stability
Auto zero
o On
Off



* = according to the menu codes configured by our Service Center
(Setup: A/D Converter Configuration: User-definable units)

Setting the Device Parameters (DEVICE)

Purpose

This menu item enables you to configure the scale to meet individual requirements by selecting predefined menu parameters in the Setup menu. You can block access to the menu by assigning a password.

Features

The device parameters are combined in the following groups (1st menu level):

– Password
– User ID
– Clock
– Interfaces
– Display
– Keys
– Extra functions
– Factory settings: only device parameters

Factory Settings

Parameters: The factory settings are identified by the symbol "o" in the list starting on page 15.

Preparation

Display available device parameters

● Select the Setup menu: press SETUP

> SETUP is displayed:

● Select "Device parameters": use the v and > soft keys

If no password has been assigned, anyone can access the Setup menu device parameters

If a password has already been assigned:

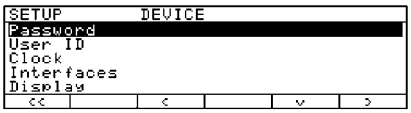
> The password prompt is displayed

○ If access is blocked by a password: enter the password using the numeric and/or alphabetic keys

○ If the last character of the password is a letter: conclude input by pressing the ABC key

● Press ↵ to confirm the password

> Device parameters are now displayed:



○ To select the next group: press the v soft key (down arrow)

○ To select the previous menu item of a group: press ^ soft key (up arrow)

○ To select the next sub-item within a group: press the > soft key (right arrow)

○ To select the previous group: press the < soft key (left arrow)

○ Press ↵ soft key to confirm the selected menu item

Entering or Changing a Password

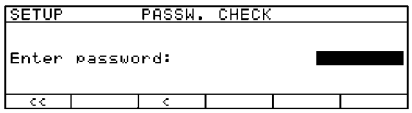
– Let's assume that a password with 8 characters max. has already been assigned to access the Setup device parameters

● Select the Setup menu: press SETUP

> SETUP is displayed

● Select parameters: Use the v and > soft keys

> The password prompt is displayed:



○ Enter the password

○ Press the ↵ soft key to confirm your password and view the device parameters

● Write down your password here for easy reference:

Password = ...

If you assign a password and then forget what the word is:

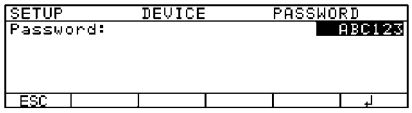
○ Enter the General Password (see Appendix)

○ Press the ↵ soft key to confirm and display the password

> The parameters are displayed

● Select the device parameter "Password": If necessary, repeatedly press v or ^ , until you see

> Password: and any existing password



- New password: Enter the numbers and/or letters for the new password (8 characters max.)
  If "none" is displayed, this means no password has been assigned to delete the user password: Press [·] and confirm
- To confirm: press the ↵ soft key
- Exit the Setup menu: press the << soft key

> Restart the application

Extra Functions

- Exit the Setup menu: press the << soft key

> Restart the application

- Print the parameter settings:

– If the device parameters are displayed: press [⊙]

> Printout (example)

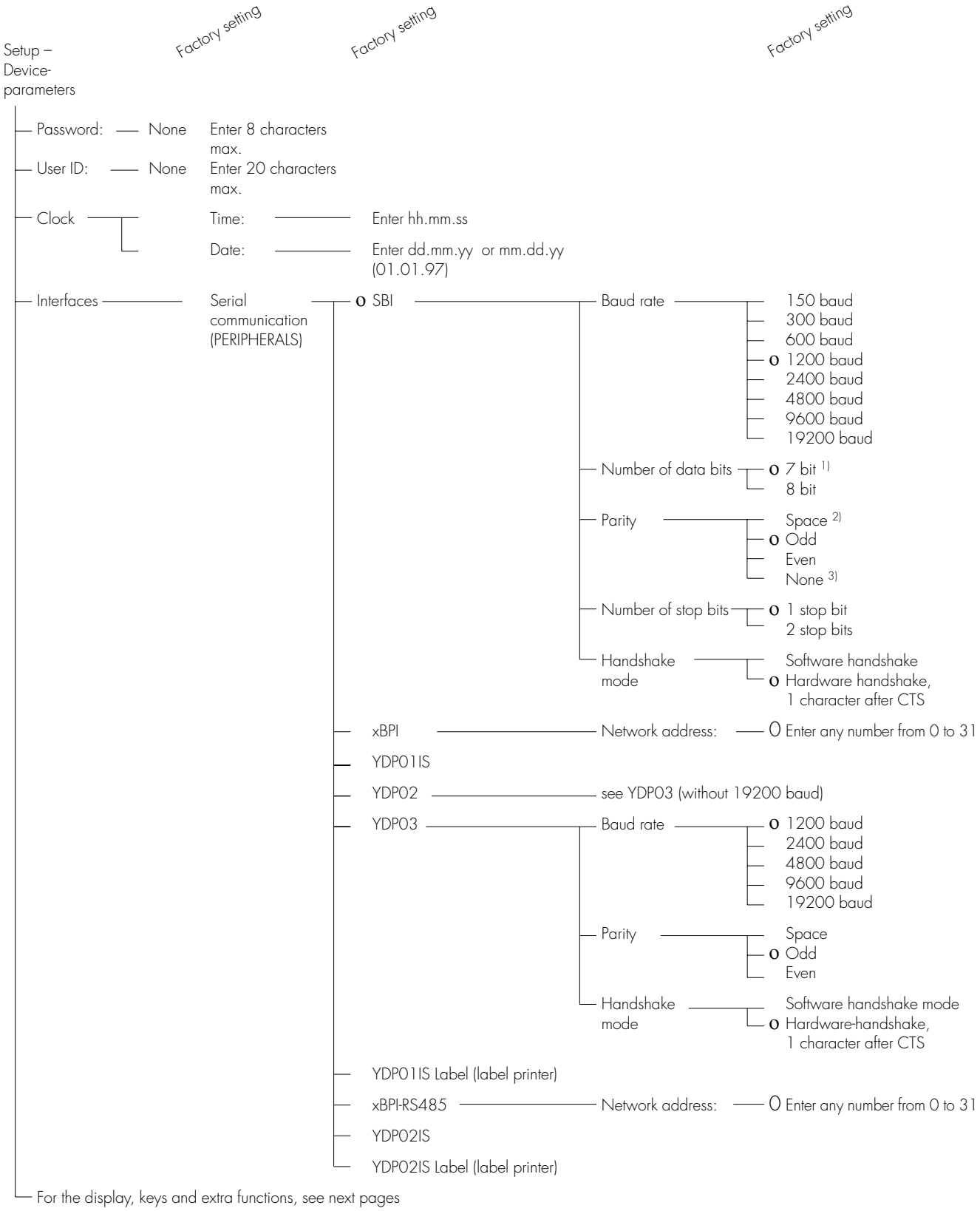
```
SETUP
      DEVICE
--------------------
 User ID
  User ID:

 Interfaces
  Serial communicati
   SBI
    Baud rate
           1200 baud
    Number of data b
         7 data bits
    Parity
                 Odd
    Number of stop b
           1 stop bit
    Handshake-mode
  Hardware handshake
  after 1 char
   Function external
         Print key
  Function control
             Output
 Display
  Contrast
                   2
  Background
                White
  Digit size
10mm + bar graph
+text display
  Application symbo
                 On
 Keys
  CF function in ap
Clear all applicati
  CF function for i
Delete last charact
  Block key functio
  All keys unblocke
```

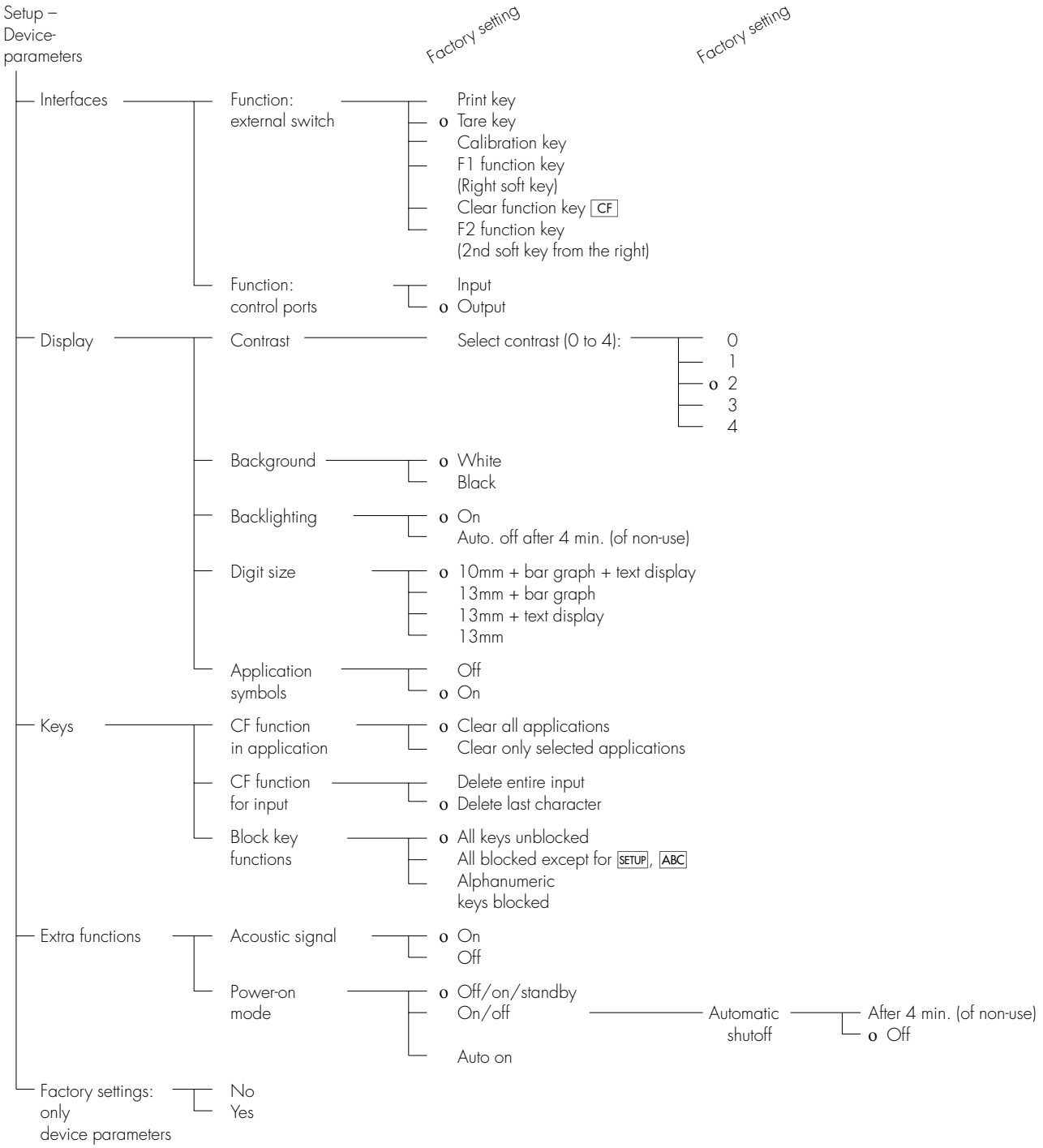
etc.

Device Parameters (Overview)

o factory setting
√ user-defined setting



1) not if "None" parity is selected
2) only if 7 data bits selected
3) only if 8 data bits selected


Setup –
Device-
parameters
Factory setting
Factory setting
Interfaces
Function:
external switch
Print key
o Tare key
Calibration key
F1 function key
(Right soft key)
Clear function key CF
F2 function key
(2nd soft key from the right)
Function:
control ports
Input
o Output
Display
Contrast
Select contrast (0 to 4):
0
1
o 2
3
4
Background
o White
Black
Backlighting
o On
Auto. off after 4 min. (of non-use)
Digit size
o 10mm + bar graph + text display
13mm + bar graph
13mm + text display
13mm
Application
symbols
Off
o On
Keys
CF function
in application
o Clear all applications
Clear only selected applications
CF function
for input
Delete entire input
o Delete last character
Block key
functions
o All keys unblocked
All blocked except for SETUP, ABC
Alphanumeric
keys blocked
Extra functions
Acoustic signal
o On
Off
Power-on
mode
o Off/on/standby
On/off
Automatic
shutoff
After 4 min. (of non-use)
o Off
Auto on
Factory settings:
only
device parameters
No
Yes

Setting the Application Parameters (Application)

Purpose

This menu item enables you to configure the scale, i.e., adapt the scale to your individual requirements by selecting from a list of parameter options in a menu. You can block access to this menu by assigning a password.

Features

The simple weighing function is available at all times. You can select one from each of the following application groups. This means a number of combinations are possible.

Application 1 (basic settings)

- Toggle weight units
- Counting
- Weighing in percent
- Animal weighing (averaging)
- Recalculation
- Calculation
- Differential weighing

Application 2 (control functions)

- Checkweighing
- Time-controlled functions

Application 3 (data records)

- Totalizing
- Formulation
- Statistics

In addition, you can assign 2 extra functions to each of the soft keys, in some cases (depending on the Setup configuration):

- Second tare memory
- Identification codes
- Manual storage M+ key
- Product data memory

Auto-start application the scale is switched on

Factory settings:
only application parameters

Factory Settings

The factory settings are identified by the symbol "o" in the list starting on the next page.

Preparation

Display available application parameters:

● Select the Setup menu: press the SETUP key

> SETUP is displayed

● Select parameters: repeatedly press the v and > soft keys

If you have already assigned a password:

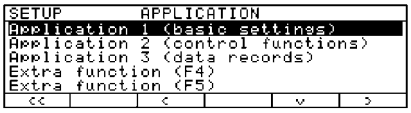
> The password prompt is displayed:

○ If access is blocked by a password: enter the password using the numeric/alphabetic keys

○ If the last character of the password is a letter: conclude input by pressing ABC

● Confirm your password and have the application parameters displayed: press the ↵ soft key

> The application menu is displayed:



○ To select the next group: press the v soft key (down arrow)

○ To select the previous item of a group: press the ^ soft key (up arrow)

○ To select the next sub-item within a group: press the > soft key (right arrow)

○ To select the previous group: press the < soft key (left arrow)

○ To confirm: press the ↵ soft key

Extra Functions

● Exit the Setup menu: press the << soft key

> Restart your application

● Print parameter settings:

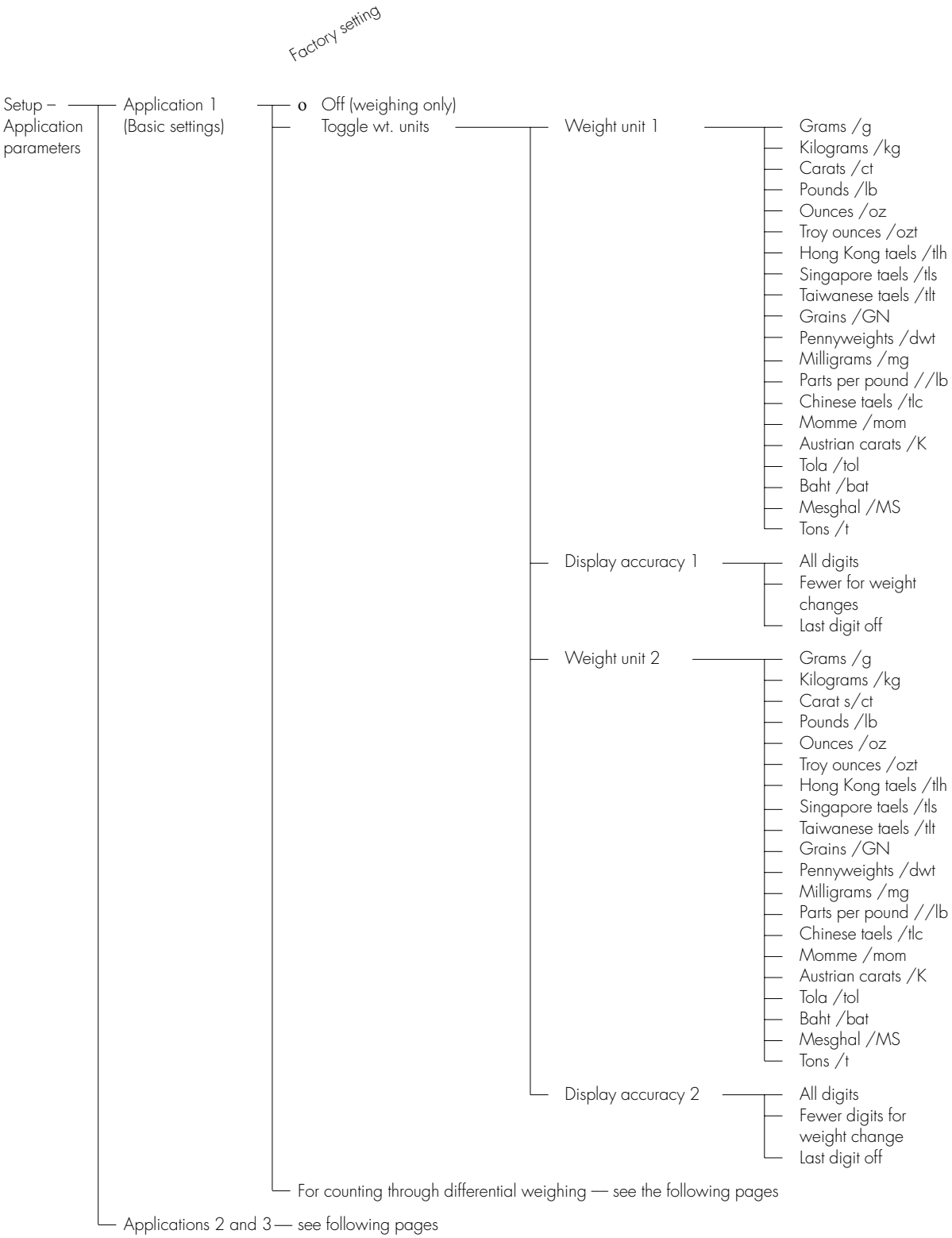
– When the scale functions are displayed, press ⊙

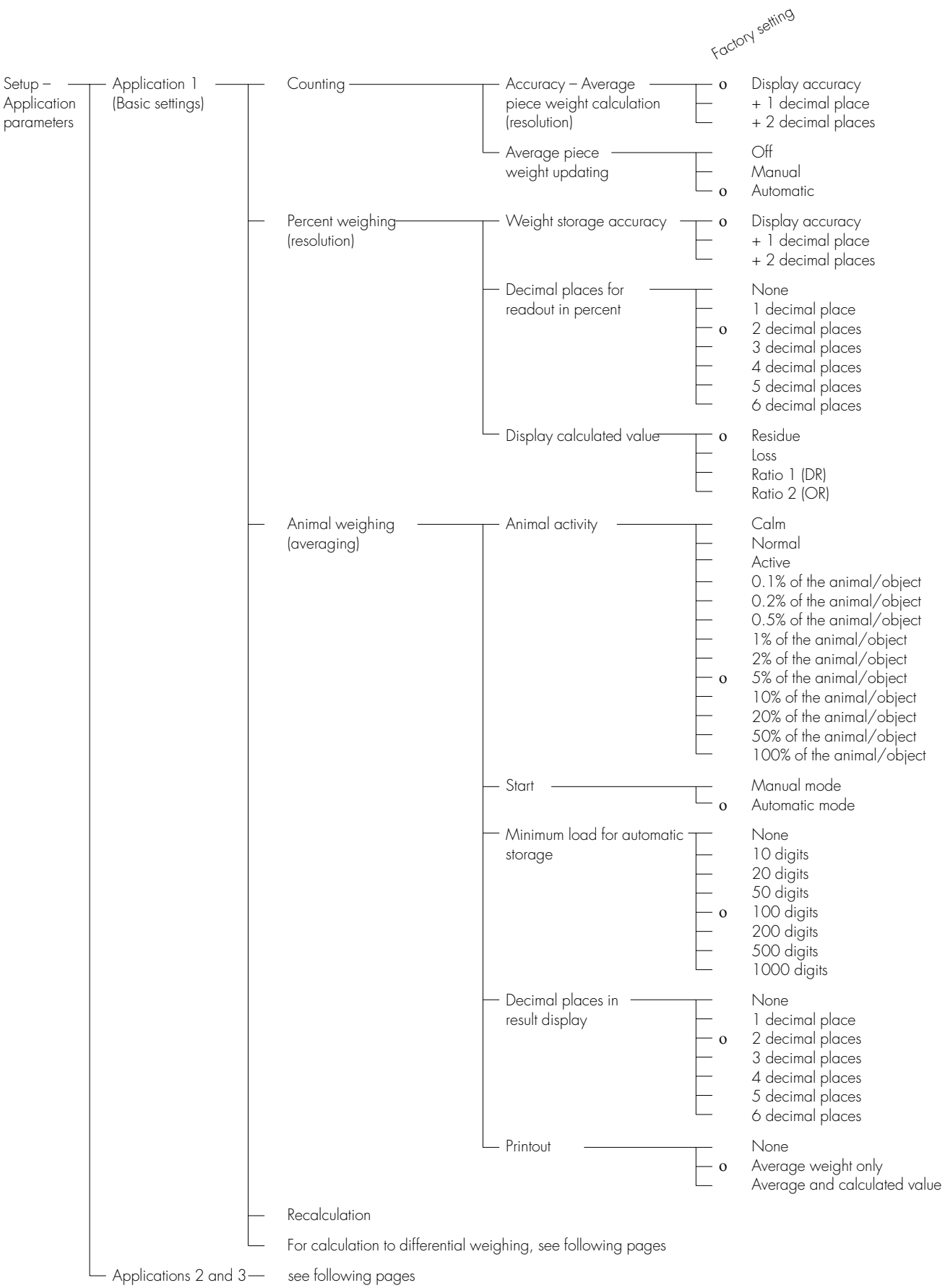
> Printout (example)
Texts with more than 20 characters are truncated

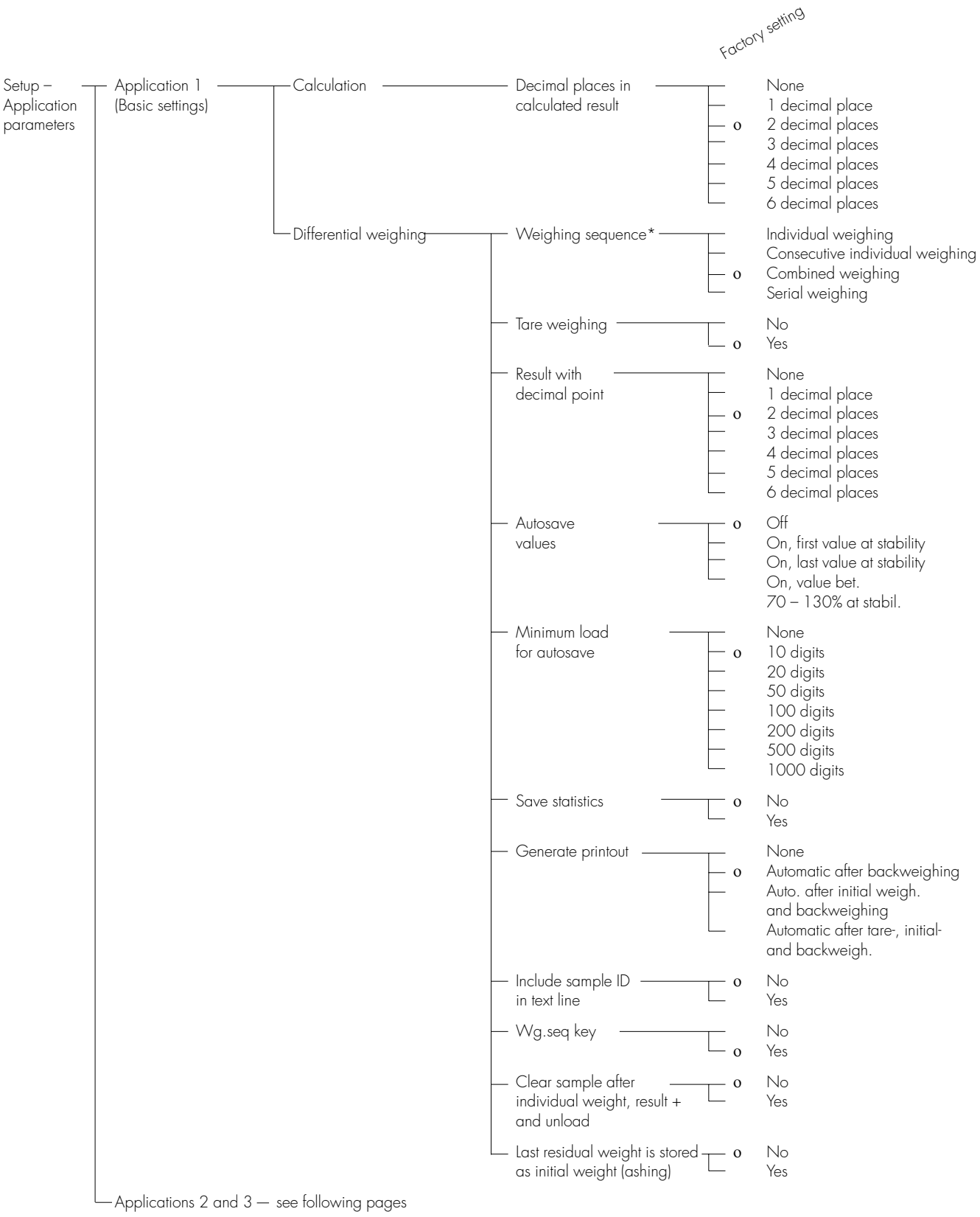
```
SETUP
    APPLICATION
--------------------
 Application 1 (basi
                  Off
 Application 2 (cont
                  Off
 Application 3 (data
                  Off
 Extra function (F4)
  2nd tare memory
   Container tare we
                   No
   Automatic printou
                  Off
 Extra function (F5)
                  Off
 Auto-start app. whe
                  Off
--------------------
```

Application Parameters (Overview)

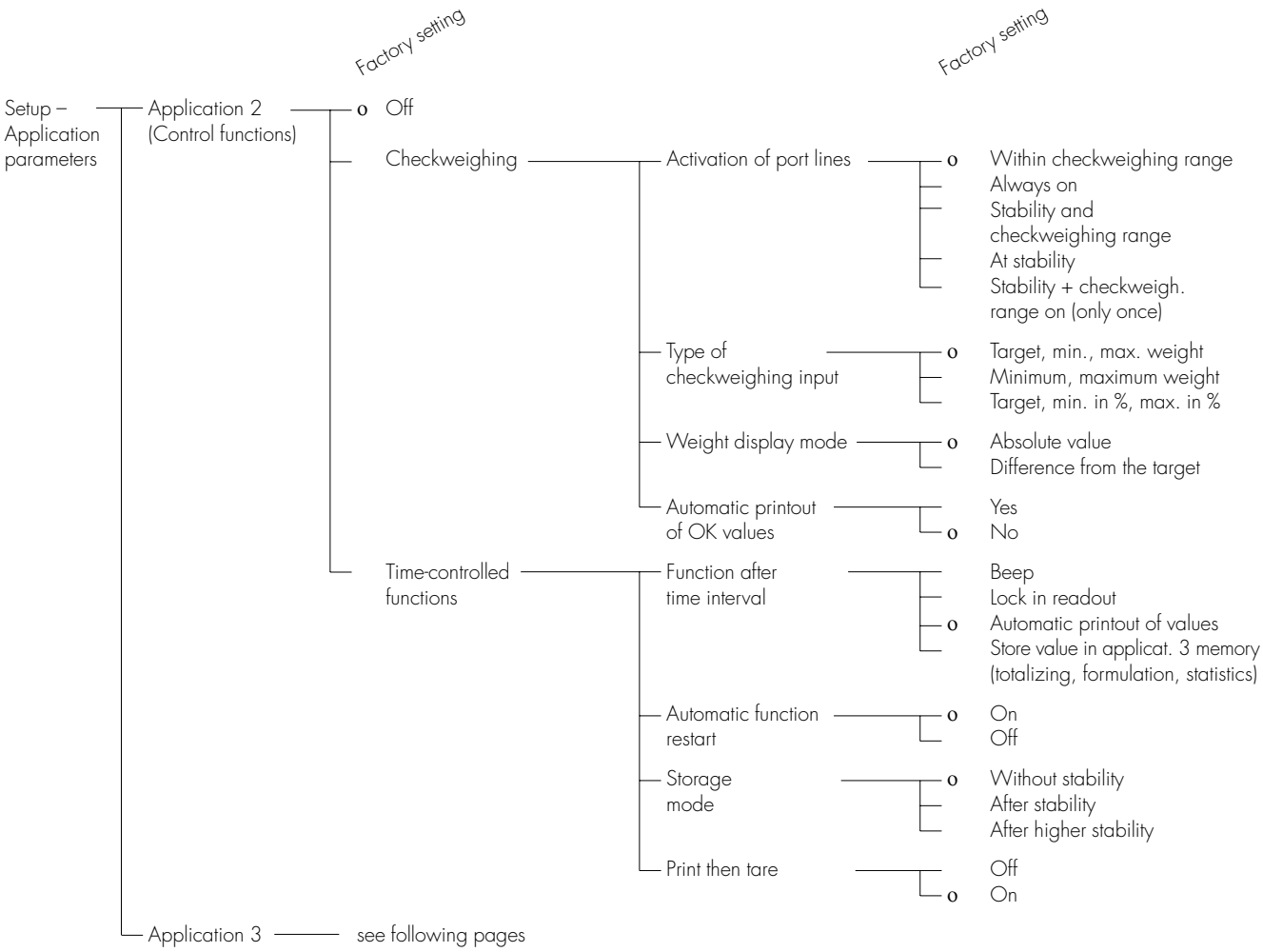
o factory settings
√ user-defined setting

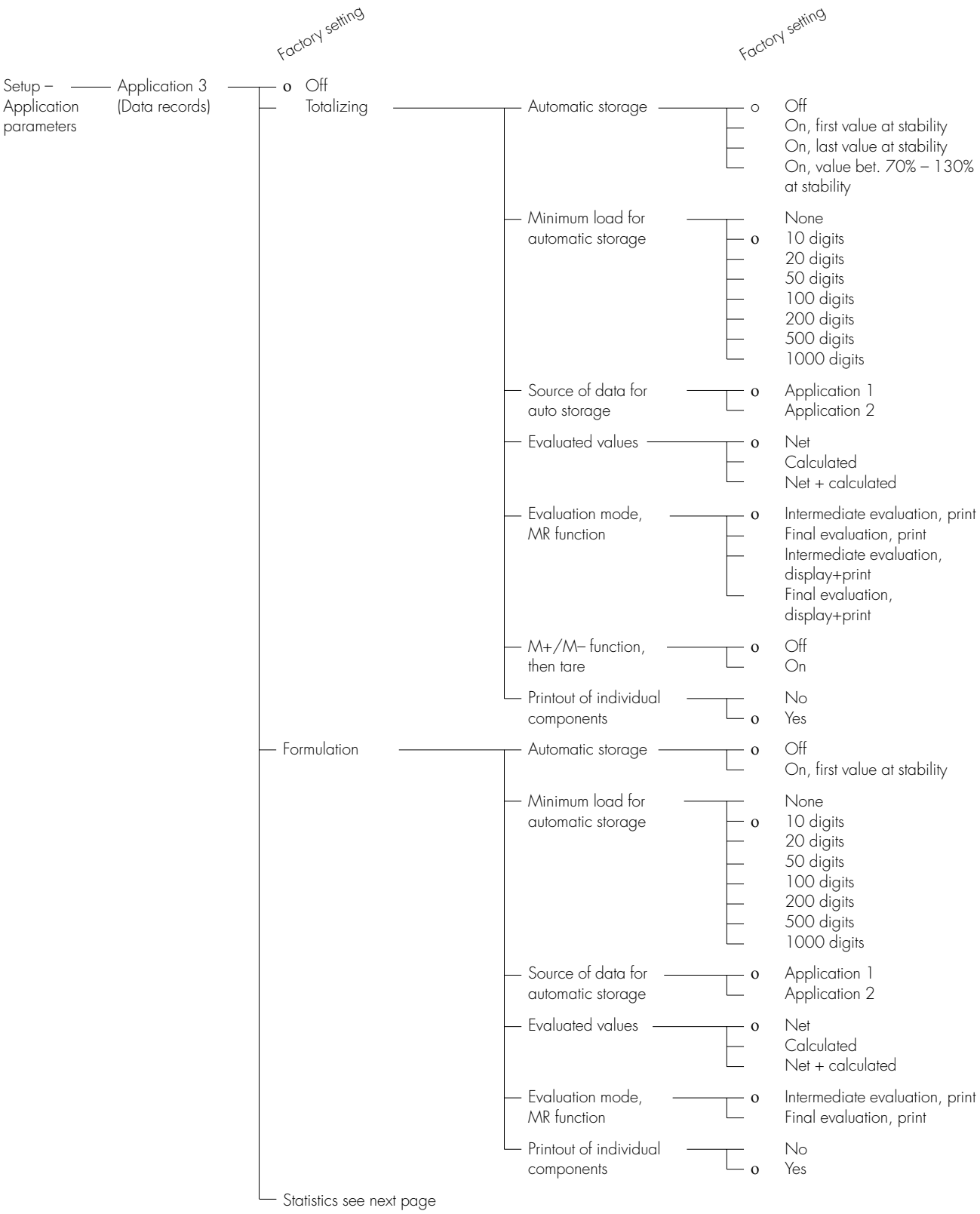


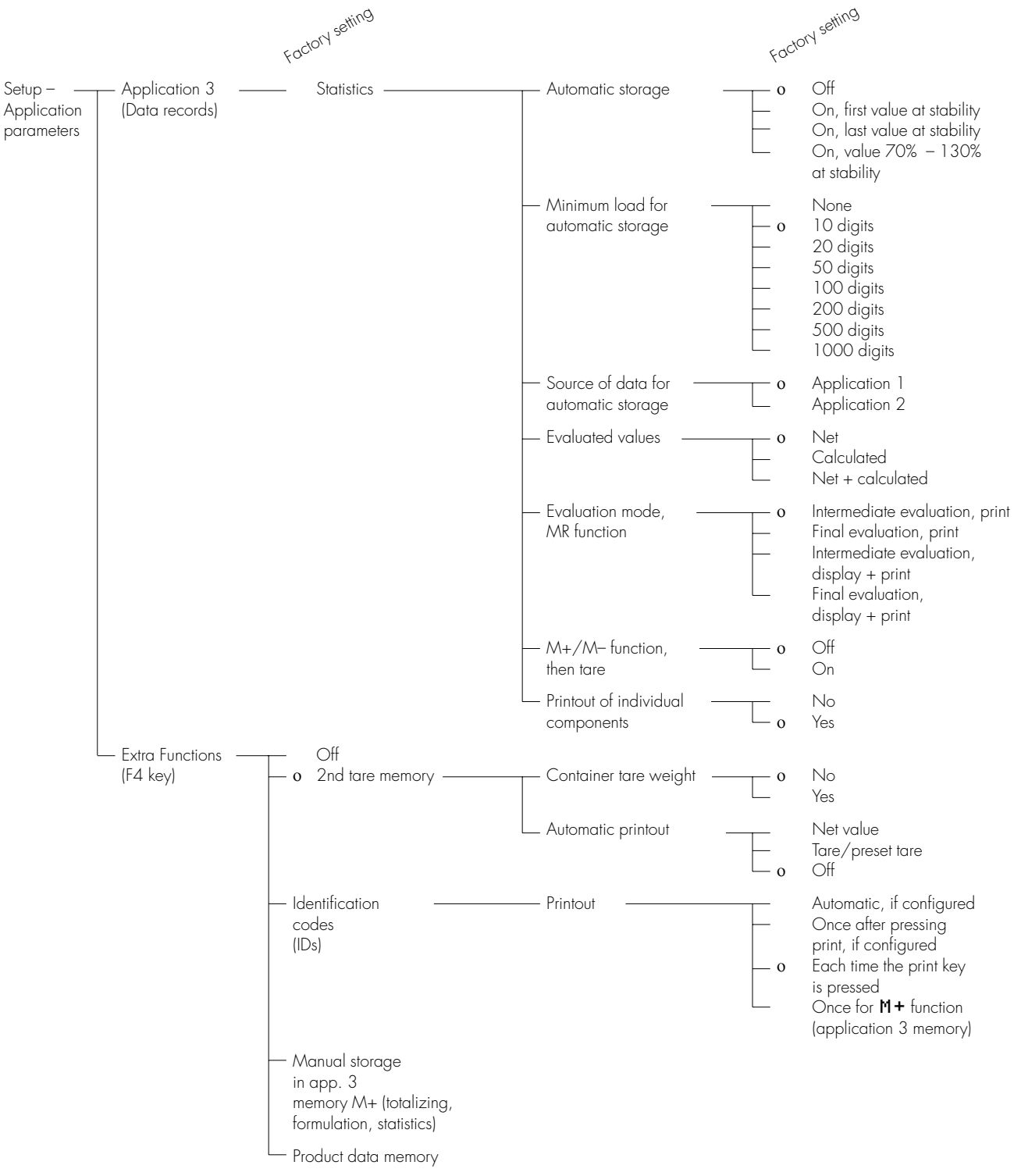

Factory setting
Setup – Application parameters
Application 1 (Basic settings)
Counting
Accuracy – Average piece weight calculation (resolution)
o Display accuracy
+ 1 decimal place
+ 2 decimal places
Average piece weight updating
Off
Manual
o Automatic
Percent weighing (resolution)
Weight storage accuracy
o Display accuracy
+ 1 decimal place
+ 2 decimal places
Decimal places for readout in percent
None
1 decimal place
o 2 decimal places
3 decimal places
4 decimal places
5 decimal places
6 decimal places
Display calculated value
o Residue
Loss
Ratio 1 (DR)
Ratio 2 (OR)
Animal weighing (averaging)
Animal activity
Calm
Normal
Active
0.1% of the animal/object
0.2% of the animal/object
0.5% of the animal/object
1% of the animal/object
2% of the animal/object
o 5% of the animal/object
10% of the animal/object
20% of the animal/object
50% of the animal/object
100% of the animal/object
Start
Manual mode
o Automatic mode
Minimum load for automatic storage
None
10 digits
20 digits
50 digits
o 100 digits
200 digits
500 digits
1000 digits
Decimal places in result display
None
1 decimal place
o 2 decimal places
3 decimal places
4 decimal places
5 decimal places
6 decimal places
Printout
None
o Average weight only
Average and calculated value
Recalculation
For calculation to differential weighing, see following pages
Applications 2 and 3
see following pages

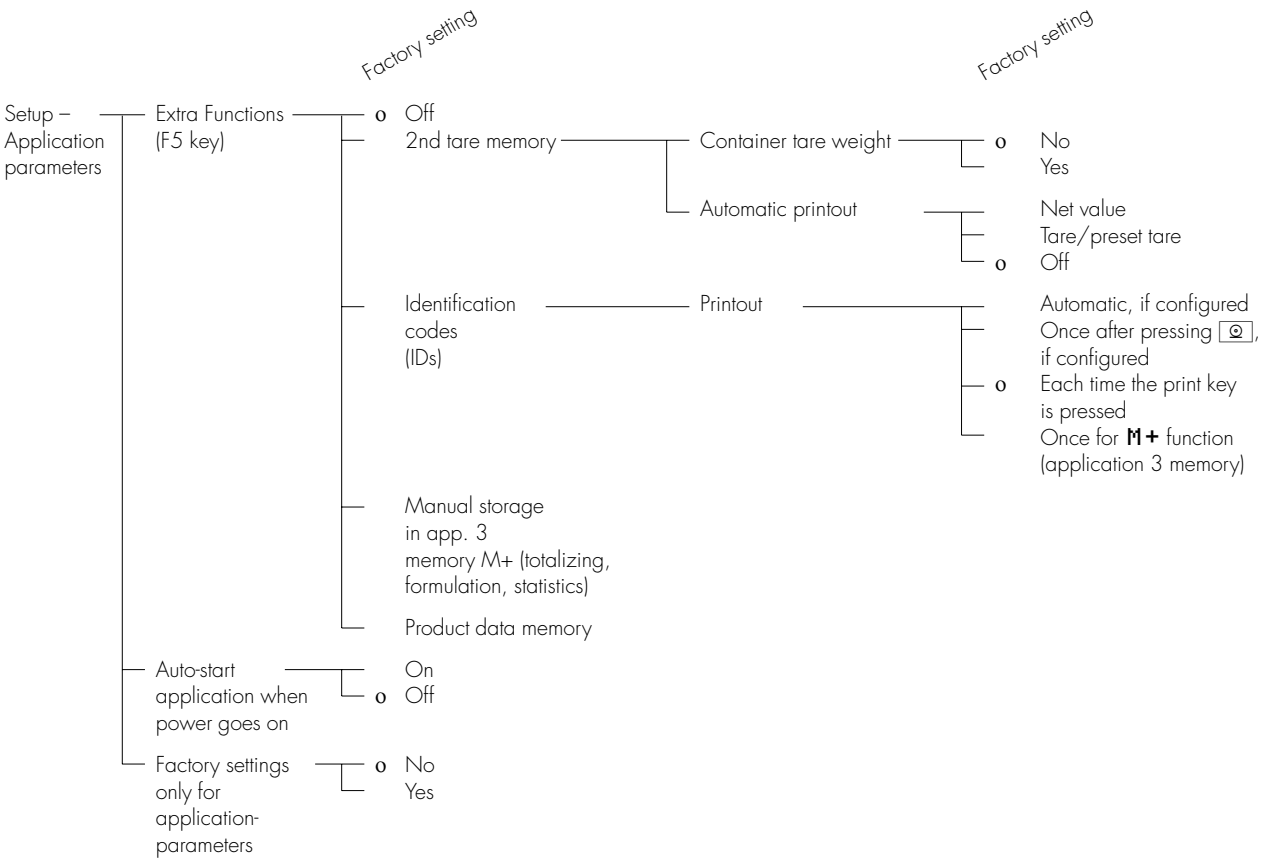


* = Setting can only be changed when the program is initially run and when the **Wg.seq.** key option is set to "No"


Factory setting
Factory setting
Setup – Application parameters
Application 2 (Control functions)
o Off
Checkweighing
Activation of port lines
o Within checkweighing range
Always on
Stability and checkweighing range
At stability
Stability + checkweigh. range on (only once)
Type of checkweighing input
o Target, min., max. weight
Minimum, maximum weight
Target, min. in %, max. in %
Weight display mode
o Absolute value
Difference from the target
Automatic printout of OK values
Yes
o No
Time-controlled functions
Function after time interval
Beep
Lock in readout
o Automatic printout of values
Store value in applicat. 3 memory (totalizing, formulation, statistics)
Automatic function restart
o On
Off
Storage mode
o Without stability
After stability
After higher stability
Print then tare
Off
o On
Application 3
see following pages


Factory setting
Factory setting
Setup – Application parameters
Application 3 (Data records)
o Off
Totalizing
Automatic storage
o Off
On, first value at stability
On, last value at stability
On, value bet. 70% – 130% at stability
Minimum load for automatic storage
None
o 10 digits
20 digits
50 digits
100 digits
200 digits
500 digits
1000 digits
Source of data for auto storage
o Application 1
Application 2
Evaluated values
o Net
Calculated
Net + calculated
Evaluation mode, MR function
o Intermediate evaluation, print
Final evaluation, print
Intermediate evaluation, display+print
Final evaluation, display+print
M+/M– function, then tare
o Off
On
Printout of individual components
No
o Yes
Formulation
Automatic storage
o Off
On, first value at stability
Minimum load for automatic storage
None
o 10 digits
20 digits
50 digits
100 digits
200 digits
500 digits
1000 digits
Source of data for automatic storage
o Application 1
Application 2
Evaluated values
o Net
Calculated
Net + calculated
Evaluation mode, MR function
o Intermediate evaluation, print
Final evaluation, print
Printout of individual components
No
o Yes
Statistics see next page


Factory setting
Factory setting
Setup – Application parameters
Application 3 (Data records)
Statistics
Automatic storage
o Off
On, first value at stability
On, last value at stability
On, value 70% – 130% at stability
Minimum load for automatic storage
None
o 10 digits
20 digits
50 digits
100 digits
200 digits
500 digits
1000 digits
Source of data for automatic storage
o Application 1
Application 2
Evaluated values
o Net
Calculated
Net + calculated
Evaluation mode, MR function
o Intermediate evaluation, print
Final evaluation, print
Intermediate evaluation, display + print
Final evaluation, display + print
M+/M– function, then tare
o Off
On
Printout of individual components
No
o Yes
Extra Functions (F4 key)
Off
o 2nd tare memory
Container tare weight
o No
Yes
Automatic printout
Net value
Tare/preset tare
o Off
Identification codes (IDs)
Printout
Automatic, if configured
Once after pressing print, if configured
o Each time the print key is pressed
Once for M+ function (application 3 memory)
Manual storage in app. 3 memory M+ (totalizing, formulation, statistics)
Product data memory


Factory setting
Factory setting
Setup – Application parameters
Extra Functions (F5 key)
o Off
2nd tare memory
Container tare weight
o No
Yes
Automatic printout
Net value
Tare/preset tare
o Off
Identification codes (IDs)
Printout
Automatic, if configured
Once after pressing ⊙, if configured
o Each time the print key is pressed
Once for M+ function (application 3 memory)
Manual storage in app. 3 memory M+ (totalizing, formulation, statistics)
Product data memory
Auto-start application when power goes on
On
o Off
Factory settings only for application-parameters
o No
Yes

Selecting the Printout Function (PRINTOUT)

Purpose

This menu item enables you to configure the printout to meet your individual requirements by selecting predefined menu parameters in the Setup menu. Printouts of weights and other measured or calculated values and IDs enable you to document your data. You can select the particular data you wish to print. To prevent changes to your settings, you can block access to the menu by assigning a password.

Features

The device parameters are combined in the following groups (1st menu level):

- Application-defined output
  - Configured Printout
  - FlexPrint
- Automatic output of displayed values
- Output to interface port
- Line format
- ISO/GLP/GMP printout
- Identification (identifier)
- Factory settings – printout only

Factory Settings

Parameters: The factory settings are identified by the symbol "o" in the list on the next page.

Preparation

Display available printout parameters

● Select the Setup menu: press SETUP

> SETUP is displayed:

● Select "Printout": use the v and > soft keys

If no password has been assigned, anyone can access the printout parameters in the Setup menu

If a password has already been assigned:

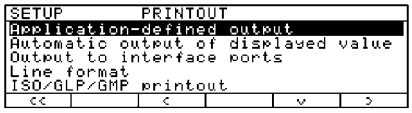
> The password prompt is displayed

○ If access is blocked by a password: enter the password using the numeric and/or alphabetic keys

○ If the last character of the password is a letter: conclude input by pressing the ABC key

● Press ↵ to confirm the password

> Printout parameters are now displayed:



○ To select the next group: press the v soft key (down arrow)

○ To select the previous item of a group: press the ^ soft key (up arrow)

○ To select the next sub-item within a group: press the > soft key (right arrow)

○ To select the previous group: press the < soft key (left arrow)

○ To confirm: press the ↵ soft key

Extra Functions

● Exit the Setup menu: press the << soft key

> Restart your application

● Print parameter settings:

– When the printout parameters are displayed, press ⊙

> Printout (Example)

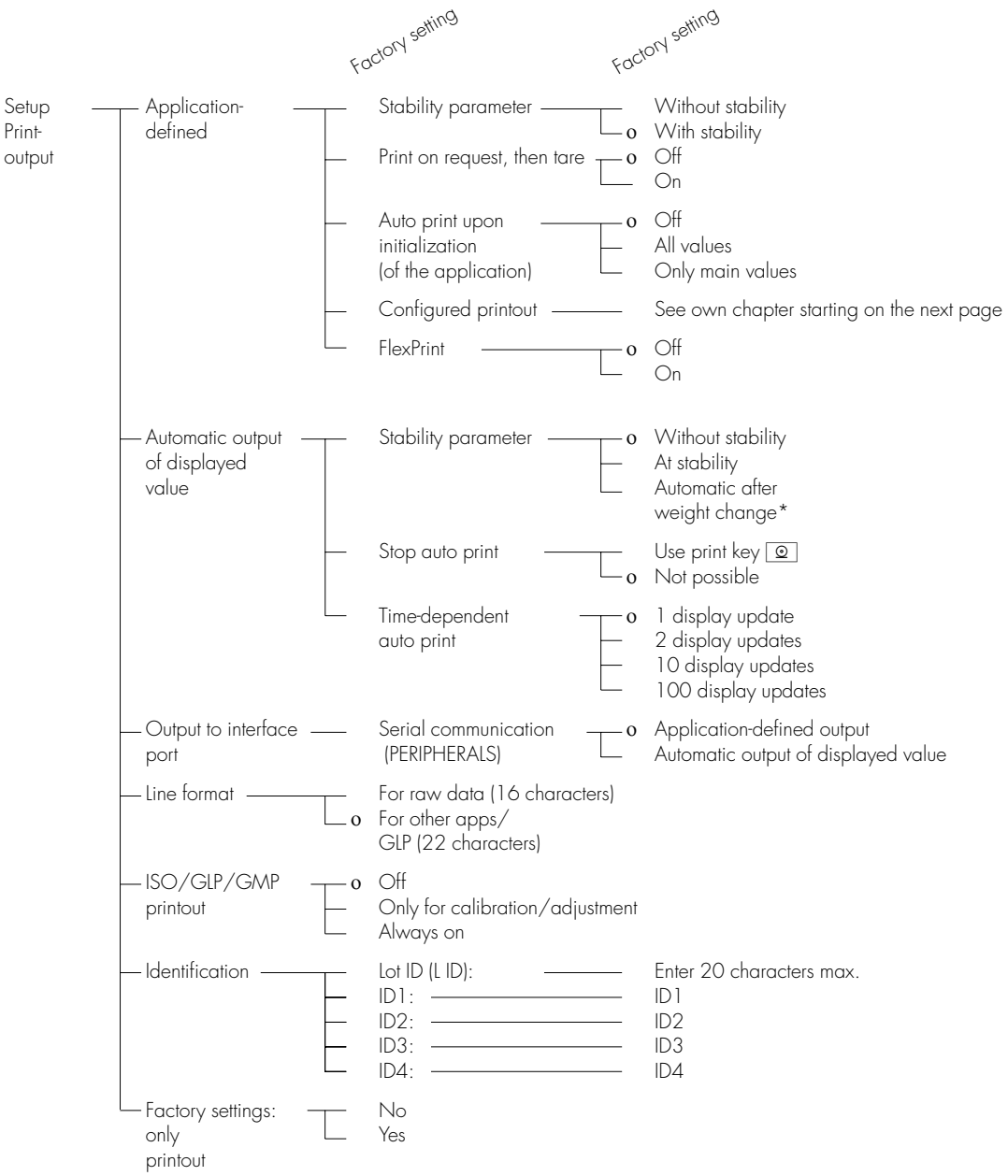
```
SETUP
      PRINTOUT
--------------------
 Application defined
  Stability paramete
     With Stability
  Print on request t
              Off
  Auto print upon in
          All values
  Configured printou
   Indiv.: Printout
   Comp.: Printout
   Total: Printout
  FlexPrint
                  Off
 Automatic Output of
  Stability paramet
     Without stabili
  Stop auto print
       Not possible
  Time-dependent aut
    1 display update
 Output to interface
  Serial communicat:
Application-defined
output
  Line format
For other apps/GLP
  (22 characters)
  ISO/GLP/GMP printou
                  Off
 Identification
  Lot (L ID):

  ID1:
                  ID1
```

etc.

Printout Parameters (Overview)

o factory setting
√ user-defined setting



* = auto print when load change is > 10 d and stability is reached: no printout until residual difference in load value is < 5 d

Configured Printout

Purpose

This menu item enables you to configure individual printout formats. With the formulation, totalizing and statistics applications, you can also define the values to be included on the total printout when the MR key is pressed.

Under "Setup: Printout: Application-defined output: Configured printout", you can configure individual, component or total data records that contain the items available for printouts in each application. Configure these printouts after you have configured the applications, because some entries in the data record depend on the particular application.

Features

– Maximum items in a data record: 60

– Separate configuration of printout formats for individual weights, components, total, backweighing and statistics

– Individual printout generation: press the [⊙] key

Automatic printout of application data: results from animal weighing or density application (Setup menu: Application 1: Density: Printout: All data) OK values from checkweighing application, time-controlled printouts, 2nd tare memory

– Component printout: For results from totalizing, formulation or statistics applications, press **M+** or **M–** (Setup: Application 3: ..., Printout of individual components: On)

– Total printout: For totalizing, formulation or statistics applications, press **MR**

– Backweighing printouts or records: automatically generated after backweighing or manually by pressing the [⊙] key when the result is displayed at the end of backweighing

– Statistics printout or output:To generate, press the [⊙] key when the statistics are displayed

Printouts for Differential Weighing:

These printouts can be generated as standard or configured (user-defined) reports.

You can configure the following printouts:

– Individual printout

– Backweighing printout

– Statistics printouts

Printouts are generated in one of two ways:

– at the request of the user by pressing the [⊙] key (print on request)

– automatically, if configured in the Setup menu [Application parameters: Application 1: Differential weighing: Generate printout: Auto]

You can turn off automatic printout generation in the Setup menu [Application parameters: Application 1: Differential weighing: Generate printout: None]

Data records are deleted after you have switched to a different application or activated or de-activated an extra function in the application parameters of the Setup menu

– A new pick list for a data record is created based on the currently active application programs and extra functions

– Printout items can be deleted individually

– No printout is generated when the following setting is configured:

  Setup: Printout: Line format: For raw data (16 characters)

– Print item "Form feed" for footer: Advance to beginning of next label in the "YDP01IS-Label" and "YDP02IS-Label" interface mode

Extra Functions

● Exit printout configuration: press **<<** soft key

> Restart application

Printing "Select" and "List" Settings

– **LIST**: print the currently selected list **Select**: printout items that can still be selected

● When the select bar is on **LIST** or **Select**: press the [⊙] key

> Printout (Example)

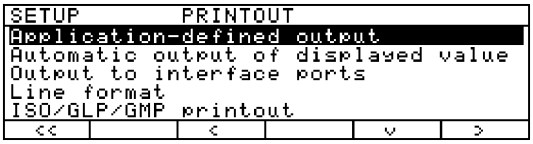
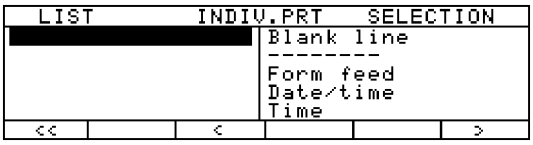
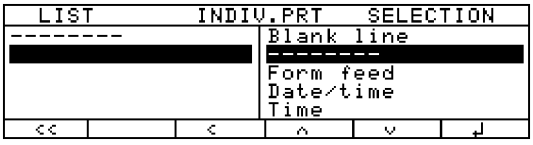
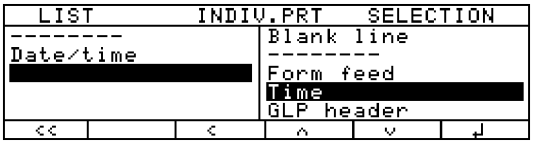
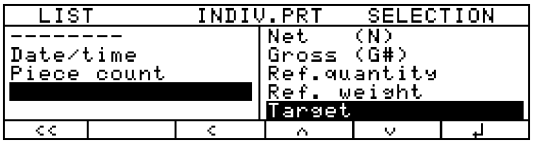
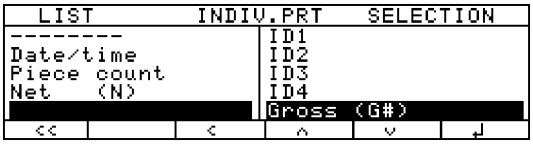
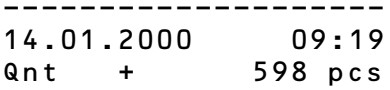
```
BACKW. PRINT.LIST
====================
Sample date
Net initial wt.
Backweighed res
Loss in %
====================
```

etc.

Practical Example:

Configure an Individual Printout for Counting Application to Include Dotted Line, Date/Time, Piece Count and Net Weight

Settings (changes in the factory settings required for this example):
Setup: Application parameters: Application 1: Counting
Exit the Setup menu: press the < < soft key
Then call Setup again and select: Printout: Application-defined output: Configured printout

Step	Press key(s) (or follow instructions)	Display/Output
1. Select Setup menu, "Printout"	SETUP, then ∨ repeatedly and > soft key	
2. Confirm "Application-defined output"	> soft key	
3. Select and confirm "Configured printout"	∨ soft key 3 x > soft key	
4. Confirm "Indiv. printout"	> soft key	
5. Select "Dotted line"	>, ∨, ↵ soft keys	
6. Select "Date/time"	∨ soft key twice, then ↵ soft key	
7. Select "Piece count"	∨ repeatedly, then ↵ soft key	
8. Select "Net weight"	∧ soft key repeatedly, then ↵ soft key	
9. Exit "Printout configuration"	< < soft kex	
10. Perform weighing operations, then print	⊙	

Data Items for the Printout:

Parameter	Display text	Indiv.	Comp.	Total
Blank line**	Blank line	x	x	x
Dotted line**	--------	x	x	x
Form feed*	Form feed	x	x	x
Date/Time*	Date/Time	x	x	x
Time with seconds*	Time	x	x	x
GLP header*	GLP header	x	x	x
GLP footer*	GLP footer	x	x	x
Sample ID*	S ID	x	x	x
ID 1*	ID1	x	x	x
ID 2*	ID2	x	x	x
ID 3*	ID3	x	x	x
ID 4*	ID4	x	x	x
Net weight*	Net (N)	x		
Gross weight*	Gross (G#)	x	x	x
Preset tare/ Tare 1 weight*	Tare1 (T1/PT1)	x	x	x
With "Counting" application:				
Reference quantity	Ref. quantity	x	x	x
Reference weight	Ref. weight	x	x	x
Piece count	Piece Count	x		
With "Weighing in percent" application:				
Reference percentage	Ref. percent	x	x	x
Reference weight	Ref. weight	x	x	x
Percentage	Percent	x		
With "Animal Weighing" application:				
Number of weighing operations	No. of weights	x	x	x
Calculation factor	Factor	x	x	x
Average animal weight	Mean value	x		
Average Animal weight calculated	Mean factor	x		
With "Calculation" application:				
Equation	Equation	x	x	x
Calculated result	Calc. result	x		

* = Items are available independently of the applications selected

** = Items are available independently of the applications selected and can be selected more than once

Data Items for the Printout:

Parameter	Display text	Indiv.	Comp.	Total
With the "Check-weighing" application:				
Target value	Target	x	x	x
Minimum value	Minimum	x	x	x
Maximum value	Maximum	x	x	x
With "Time-controlled Functions" application:				
Time/interval	Time/interval	x		
With the "Totalizing" application:				
No. of weights	No. of wts.		x	x
Weight of transaction	Trans. wt.		x	
Weight total	Wt. total			x
Number of calculated values	No.of calc.val.		x	x
Calculated value transactions	Calc.val.trans.		x	
Total of calculated values	Total calc.			x
Nominal no. of weighing operations	Nom.no.wghs.		x	x
With "Formulation" application:				
Number of components	Number		x	x
Net component	Net component		x	
Components calculated	Net transact.		x	
Total net components	Net/comp.calc.			x
Total calc. components	Tot.comp.calc.			x
Preset tare/ Tare 2 weight	Tare2	x	x	x
Nominal no. of weighing operations	Nom.no.wghs.		x	x
With the "Statistics" application:				
No. of weights	No. of wts.		x	x
Weigth of trans.	Trans. wt.		x	
Mean weight	Average wt.			x
Standard deviation – weight	Std.dev.wt.			x
Variation coefficient –weight	Var.coeff.wt.			x
Weight total	Wt.total			x
Minimum weight	Min. wt.			x
Maximum weight	Max. wt.			x
Difference – weight	Diff. wt.			x
No. of calc. values	No. of calc. val.		x	x
Calc. value – transactions	Calc.val.trans.		x	
Mean calc. value	Mean calc. val			x
Standard derivation calculated values	Std.dev.calc.			x
Variation coefficient – calc. values	Var.coeff.calc.			x
Total – calc. values	Total calc.			x
Minimum – calc. values	Min. calc.			x
Maximum – calc. values	Max. calc.			x
Difference – calc. values	Diff. calc.			x
Nominal no. of weighing operations	Nom.no.wghs		x	x

Parameter	Display text	Indiv.	Comp.	Total
With the "Differential weighing" application:				
Lot name	Lot name		x	x
Sample number	Sample no.		x	
Date/time of sampling	Sample date		x	
Sample identification	Sample ID		x	
Tare weight or input	Tara (T/PT)		x	
Initial weight or input	Net initial wt.		x	
Backweight or input; residue as weight	Backweighed res.		x	
Residual weight in percent	Residue in %		x	
Weight loss	Weight loss		x	
Loss in percent	Loss in %		x	
Factor used in calculation	Factor		x	
Loss calculated as a weight	D.res.		x	
Ratio1 % (DR)	Ratio1		x	
Ratio2 % (OR)	Ratio2		x	
Date/time of statistics	Date of statis.			x
Statistics identification	Statistics ID			x
Number of samples	No. of samples			x
Mean value	Mean value			x
Standard deviation	Standard dev.			x
Variation coefficient	Variat. coeff.			x
Sum	Sum			x
Minimum	Minimum			x
Maximum	Maximum			x
Difference between minimum & maximum	Difference			x

Generate "FlexPrint"

Purpose

You can use a PC with the YAD02IS "Nice Label Express" software from Sartorius to load user-defined label-printing formats in your FCT01 scale. This software lets you connect any of a number of printers, equipped with a variety of printer fonts, to the RS-232 interface on your FCT01 terminal.

Features

With the "FlexPrint" option activated:

- Print command generates configured printout (if print instruction file exists; see table, next page).
  Print command generates default printout (if print instruction file does not exist).
- The function that generates an automatic printout upon initialization of an application cannot be used. Initialization data can be output only to a print instruction file.

The following items are output only as standard printouts:
- Calibration/adjustment reports
- SETUP printouts
- ⊙ key in "Identifier" mode: display page
- ⊙ key in "Product data memory" mode: display page
- ⊙ key in "Parameter" display page mode for "Checkweighing" application: print function carried out
- MR function carried out when ⊙ key pressed during evaluation (info window) in Totalizing and Statistics applications.
- Printout for legal metrology: Weight blocks (special weight value formats that are acceptable in legal metrology) are designated by the following line, which is printed in both header and footer and cannot be edited:

```
------ CE [M] -------
```

Examples of Weight Block Printouts

Without tare:

```
------ CE [M] -------
N   +       348.65 kg
------ CE [M] -------
```

With tare:

```
------ CE [M] -------
G   +       459.70 kg
N   +       348.65 kg
T1  +       111.05 kg
------ CE [M] -------
```

Scale tare (2nd tare memory):

```
------ CE [M] -------
G   +       124.45 kg
N   +       100.00 kg
T1  +        24.00 kg
T2  +         0.45 kg
------ CE [M] -------
```

Preparation

- Configure FlexPrint in Setup: press the SETUP key
- Select **Printout**: press **v** soft key 3 times and then **>** soft key
- Confirm **Application-defined output**: press **>** soft key
- Select **FlexPrint**: press **v** soft key 4 times and then **>** soft key
- Select **On**: press **v** soft key and then **>** soft key
- Save settings and exit Setup: press **<<** soft key

Printouts generated using the "Nice Label Express" software are divided into two groups:

Print events with all applications except differential weighing:

	Event	Explanation	File name for event group:
1.	[⊙] key with individual values	Print key	PPRINT
2.	[⊙] key with text input	Input and [⊙] key	PDIRECT
3.	GLP/GMP header	GLP header	PGMPHEAD
4.	GLP/GMP footer	GLP footer	PGMPFOOT
5.	Results, Application 1	Animal weighing, MR-CF	PA1RES
6.	Results, Application 2	OK values, time-controlled print	PA2RES
7.	Results, Application 3	MR,MR-CF	PA3RES
8.	Components, Application 1	M+ printout	PA1COMP
9.	Components, Application 3	M+/M printout	PA3COMP

Print events with differential weighing:

	Event	Explanation	File name for event group:
1.	[⊙] key with individual values	Print key	PPRINT
2.	[⊙] key with text input	Input and [⊙] key	PDIRECT
3.	GLP/GMP header	GLP header	PGMPHEAD
4.	GLP/GMP footer	GLP footer	PGMPFOOT
5.	Automatic printout after tare/initial weighing	Tare soft key, initial weight	PDCOMP
6.	Differential weighing, results	Automatic after backweighing; print key while results displayed	PDRES
7.	Catalog printout sample	Print key on value/result page	PDSAMP
8.	[⊙] key with statistics app.	Print key on statistics page	PDSTAT

Displaying Info

Purpose

This menu item enables you to have information displayed about the specific scale ("device"), as well as "FlexPrint" information.

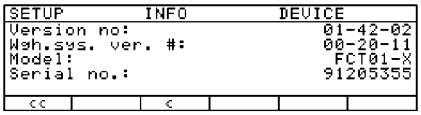
Displaying Device Information

● Select the Setup menu:
press the SETUP key

> "SETUP" is displayed:

● Select "Device information":
Repeatedly press the v soft key, then press the > soft key

> Device information is displayed:



● Print device information:
Press the ⊙ key

> Printout (Example)

```
--------------------
23.02.2000      13:02
Model          FCT01-X
Ser. no.     91205355
Vers. no.    01-42-02
(Version of the operating program)
ID           BECKER123
(User-ID)
--------------------
SETUP
        INFO

                DEVICE
--------------------
 Version-no.:
              01-42-02
 (Version of the operating program)
 Wgh. sys. vers:
              00-20-11
 (Version no. of the weighing cell)
 Model:
                FCT01-X
 Serial no.:
              91205355
--------------------
```

● Return to SETUP overview:
press the < soft key

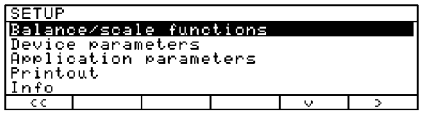
● Exit Setup menu:
press the << soft key

> Original settings are restored

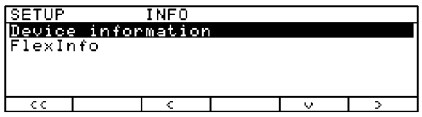
Display Flexprint Information

● Select the Setup menu:
press the SETUP key

> "SETUP" is displayed:

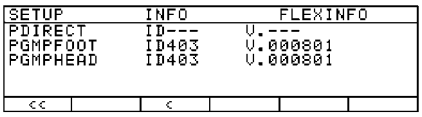


● Select "Info":
press the v soft key repeatedly and then the > soft key



● Select "FlexInfo":
press the v soft key and then the > soft key

> The FlexPrint information is displayed, with print instruction file name, software ID and version number:



○ To select a particular print file name with software ID (for example, ID403), if desired:
press key v or ^ as required

> If the display shows `ID---` :
The weight block for legal metrology is not printed by this print file.

> Display of version number:
`V.xx.xx.xx`
Created by Sartorius:
`V.S.xx.xx.xx`

● Return to SETUP overview:
press the < soft key

● Exit Setup menu:
press the << soft key

> The device returns to the previous mode

MP8 Interface Emulation

Purpose

With the MP8 interface emulation function, you can connect peripheral devices of the MP8 generation that have separate AC power supplies (such as the 73822... Data Control terminal, a YFC..., or a YDI 50 Z Data Input dedicated keyboard, for example) to your FCT terminal.

Features

– The scale can be used only to determine weights.

– The interface communicates exclusively in the MP8 binary protocol.

– Select the application program and the program index for MP8, as well as individual application parameters, in the Setup menu.

Preparation

– Activate the MP8 emulation mode*:

● Press SETUP

● Select the `factory settings` and confirm: press the `v` soft key repeatedly and then the `>` soft key

● Select `Reset to MP8`: press `v` soft key and `>` soft key

● Select `Yes` and press ↵ to confirm

> The terminal is restarted

* follow the same procedure to return from MP8 emulation back to factory setting

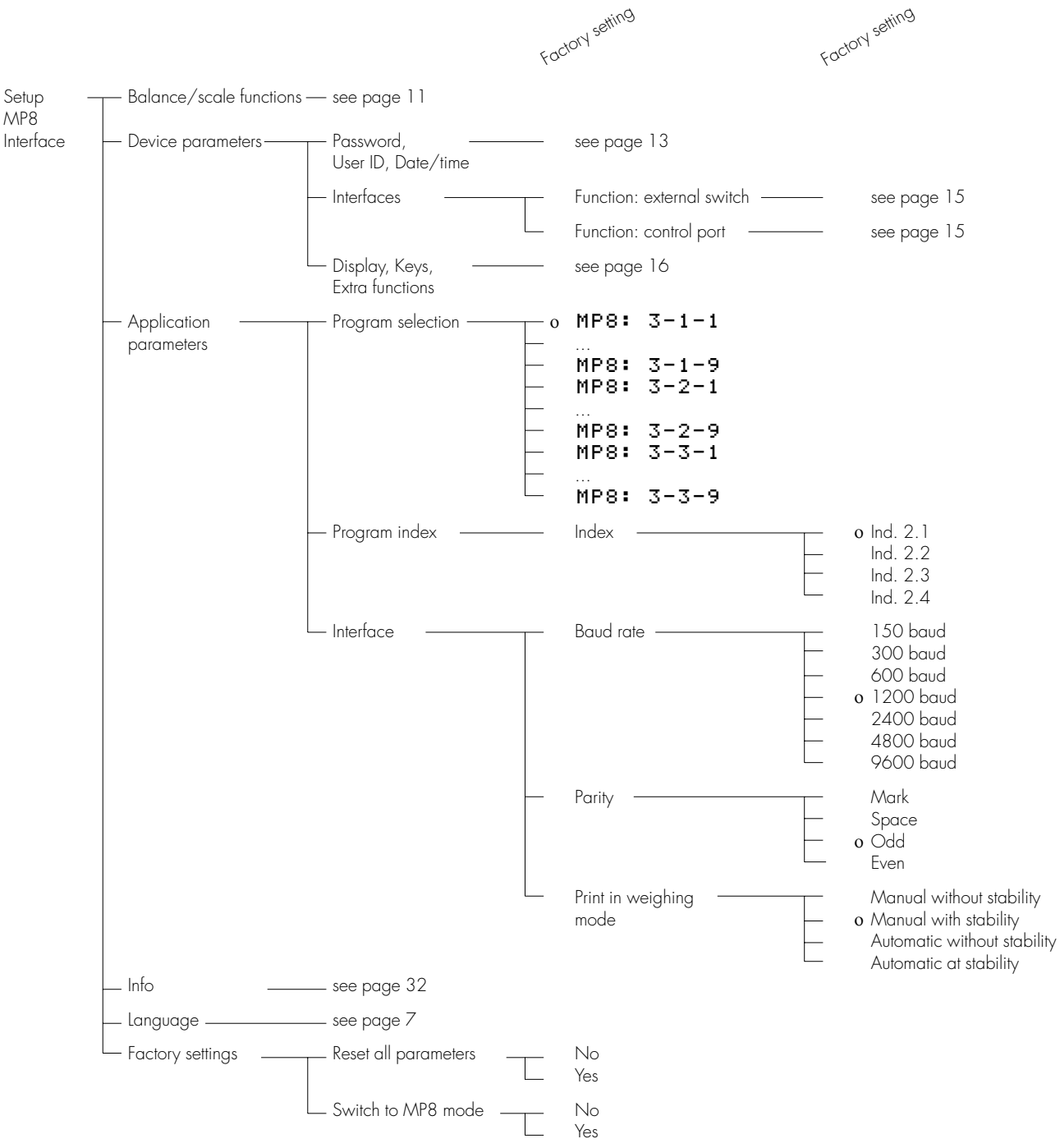
Factory Settings

Each parameter category has a factory setting. To restore the factory settings, select this item in the Setup menu and select `YES` to confirm.

The following parameters are not restored to factory settings when you activate this function:
– Language
– Password
– Display contrast
– Time (clock)

MP8 Interface Emulation Parameters (Overview)

o factory setting
√ user-defined setting



Operating the Scale

Basic Weighing Function

Purpose

The basic weighing function is always accessible and can be used alone or in combination with an application program (Toggle between Weight Units, Counting, Weighing in Percent, etc.).

Features

– Taring the scale
– Assigning IDs to weights
– Printing weights
– Printing ID codes for weights

Factory Settings

Taring: `After stability`

Manual/auto print mode:
`Manual with stability`

Line format of the printout:
`For other apps/GLP (22 characters)`

Soft Key Functions

`isoTST`	Start calibration/ adjustment
`isoCAL`	Press when necessary to start calibration and adjustment
`S ID`	Stored ID entered

Preparation

● Turn on the scale: press I/⏻
> The Sartorius logo is displayed
○ To tare the scale, if desired, press TARE
> The **o** symbol is displayed when a verified scale is zeroed or tared (±0.25 digit)

Using Verified Scales as Legal Measuring Instruments in the EU:

This scale is not allowed to be used for weighing goods intended for direct sale to the public. The type-approval certificate for verification applies only to non-automatic weighing instruments; for operation with or without auxiliary measuring devices, you must comply with the regulations of your country applicable to the place of installation of your scale.

● Before using the scale as a legal measuring instrument, calibrate and adjust it at the place of use: see the section on "Calibration, Adjustment" in this chapter
○ The temperature range (°C) indicated on the verification label may not be exceeded during operation

Example:
BM 500
0 °C./.+40 °C

Assigning IDs to Weights (if desired):

- Select the parameters "Line format" and "For other apps /GLP" in the Setup menu: press SETUP
- Select "Printout": press the ˅ soft key three times, then the > soft key once
- Select "Line format": press the ˅ soft key three times, then the > soft key once
- Set parameters: see the chapter entitled "Configuring the Scale"
- Exit the Setup menu: press SETUP

Additional Functions

In addition to the functions for:

– alphanumeric input

– taring (not during alphanumeric input)

– printing

you can also access the following functions from the weighing application:

Calibration

- Press the **isoTST** soft key

> See the section on "Calibration/ Adjustment" for further instructions

Setup

- Press SETUP

> See the chapter entitled "Configuring the Scale" for further instructions

Turning Off the Scale

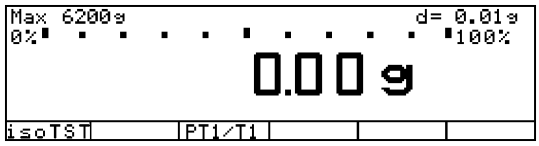
- Press I/⏻

> The scale shuts off

> The display goes blank, then standby or off is displayed with backlighting.

Practical Examples

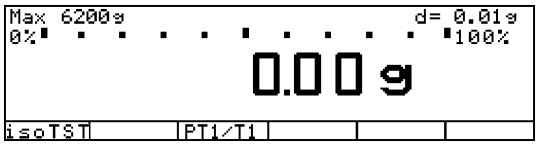
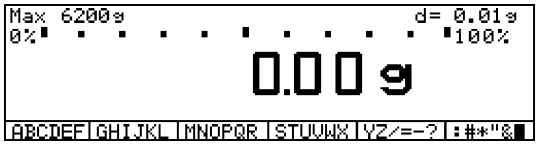
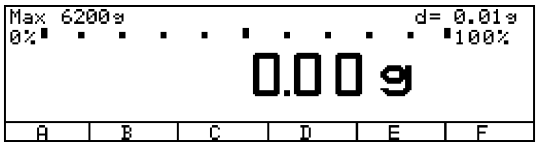
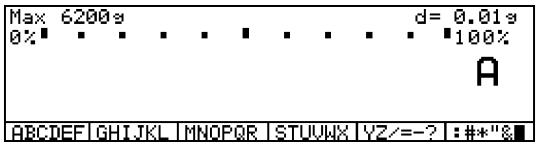
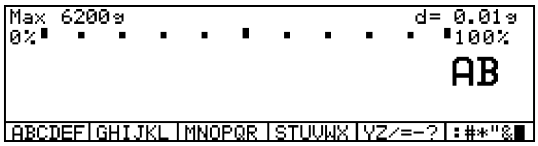
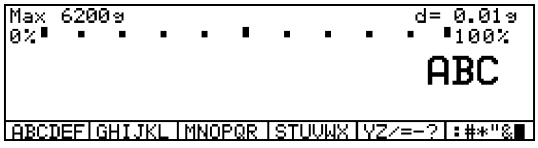
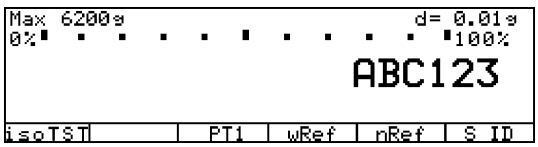
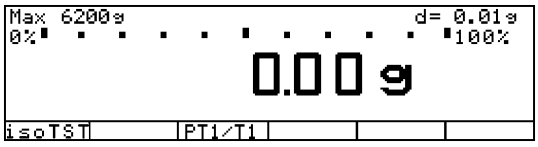
Example W1: Simple weighing

Step	Press key(s) (or follow instructions)	Display/Output
1. If necessary, tare the scale (o symbol: scale is tared – verified scales only)	TARE	
2. Enter sample ID	see example W2	
3. Determine sample weight (example)	Place sample on scale	
4. Print weight	⊙	S ID ABC123 N + 2231.56 g

Example W2

Enter "ABC123" as the sample ID

Note:
– The sample ID generally applies to one weighing operation only
– The ID is deleted after data output

Step	Press key(s) (or follow instructions)	Display/Output
Initial state (scale unloaded) (ID can also be entered while scale is loaded)		
1. Select alphabetic input	ABC	
2. Select the required letter group "A"	**ABCDEF** soft key	
3. Enter the letter "A" (To delete a letter	**A** soft key CF)	
4. Select the letter group and enter "B"	**ABCDEF** soft key **B** soft key	
5. Select the letter group and enter "C" (If you enter only letters, conclude input	**ABCDEF** soft key **C** soft key ABC)	
6. Enter the numbers 1, 2 and 3	1 2 3	
7. Store the ID (20 characters max.) – The next printout will include the sample ID	**S ID** soft key	

Device Parameters

Password

You can enter a password to block access to the operating menu and to the functions for ID code input and exact calibration weight input.

For details, see "Setting the Device Parameters" in the chapter entitled "Configuring the Scale".

User ID

You can enter your own personal password (20 characters max.)

Clock

ISO/GLP/GMP printouts in particular must be generated with the date and time stamp of the specific measurement. This date and time stamp is optional on other printouts.

For details, see "Setting the Device Parameters" in the chapter entitled "Configuring the Scale".

Interface

Purpose

This item enables you to set the parameters for the following interfaces:

- Serial communications port
- External switch function
- Control port function

Serial Communication Port (PERIPHERALS)

You can set the serial communications port to use for the following modes:

- **SBI**
- **XBPI**
- **VDP01IS**
- **VDP02**
- **VDP03**
- **VDP01IS-Label**
- **XBPI RS-485**
- **VDP02IS**
- **VDP02IS-Label**

Universal Remote Switch

You can connect an external universal remote switch (foot switch) to one of the two serial ports. Then you can assign one of the following functions to be performed when the switch is activated:

- **Print key**
- **Tare key**
- **Cal key**
- **F1 function key**
- **CF key**
- **F2 function key**

Control Port Function

You can connect either a checkweighing display or an external universal switch to the serial communications port on the scale (factory setting).

To do so, you need to configure the interface for **Input** or **Output**. (Setup: Device parameters: Interfaces)

Pin Assignment Chart of the Female Interface Connector

Pin	Function "Input"
O	⊙ key see "Universal switch"
F	TARE key
E	F6 soft key (Cal key)
G	F1 soft key
D	CF key

Pin	Function "Output"
O	"External switch" (see above)
F	Control port 1: lighter
E	Control port 2: equal
G	Control port 3: heavier
D	Control port 4: "set"

For further information on the pin assignment chart, see the section on "Pin Assignment Charts"

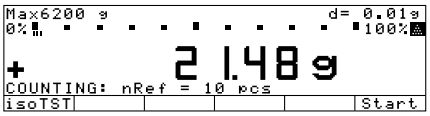
Display

You can configure the display for your individual needs.

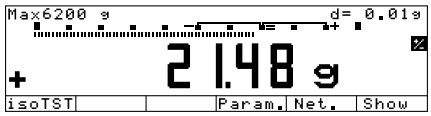
The contrast can be adjusted in 5 levels:
Contrast

Characters can be displayed in black on white or vice versa: **Background**

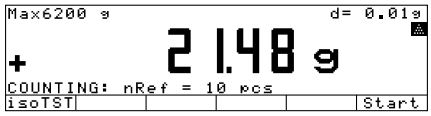
You can blank out either the bar graph or the text line or both
Digit size



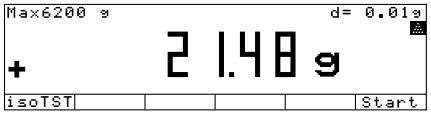
10mm + bar graph + text display



13mm + bar graph



13mm + text display



13mm

You can blank out the display of application symbols
Application symbols

Keys

You can assign different functions to the [CF] key for deleting input and applications.

When you delete applications, you can delete either the data stored for all applications or just selected data.
CF function in application

When you delete input, you can either delete all the data input in a field, or only the last character entered.
CF function for inputs

You can block key functions; you can choose whether to block all keys (except [I/⏻] and [SETUP]) or just the alphanumeric keys.
Block key functions

Extra Functions

Acoustic Signal

An acoustic signal is emitted when you press a key. When the key pressed is allowed, the signal is a single beep-tone; when it is not allowed, this is signaled by a double-beep (key does not initiate a function). In the Setup menu, you can configure whether

- the acoustic signal should sound (**On**)
- the acoustic signal should not sound (**Off**)

Power-On Mode

You can configure the scale so that when a power supply is connected,

- the scale is off (**Off/on/standby**), or
- the scale switches on automatically (**Auto on**)

You can also configure the scale to go into the standby mode (**Off/on/standby**) when it is turned off.

After you turn on the scale, a self-test of the functions is run (**TEST** is displayed in the text line and the bar graph is shown)

Calibration, Adjustment "isoTEST"*

Purpose

Calibration is the determination of the difference between the weight readout and the true weight (mass) of a sample. Calibration does not entail making any changes within the scale.

Adjustment is the correction of this difference between the measured value displayed and the true weight (mass) of the sample, or the reduction of the difference to an allowable level within maximum permissible error limits.

Using Verified Scales as Legal Measuring Instruments in the EU**

Before using your scale as a legal measuring instrument, you must perform "internal calibration" at the place of installation after the warmup period.

* isoTEST = TEST in the US and Canada

** including the Signatories of the Agreement on the European Economic Area

Features

The isoTEST function lets you check your inspection, measuring or test equipment at any time by pressing a key. The scale is calibrated and any deviation from the last adjustment is displayed. Press the **Start** soft key at this point to adjust the scale. If you do not wish to have the scale adjusted, press the **End** soft key to exit the isoTEST function.

Your scale can be calibrated externally (Scale menu: CAL/isoTST key function; menu item **Ext. cal./ adj.: factory-def. wt.** or **Ext. cal./adj.: user-defined wt.**).
External calibration can be performed
- using a preset weight value **Ext. cal./adj.: factory-def. wt.**, or
- with a user-defined weight **Ext. cal./adj.: user-defined wt.**

Adjustment can be performed
- automatically following calibration: **Cal., then auto adjust.** or
- if desired, the adjustment operation can be started manually after calibration: **Cal., then manual adjust**

You can configure whether the calibration mode
- is activated according to the specific setting (external/internal) or
- can be user-selected after the **Cal/isoTST** soft key is pressed: **Selection mode**

You can have the scale automatically display an adjustment prompt after a certain time interval has elapsed since the last calibration/adjustment or when the ambient temperature changes by a defined amount.

You can have the calibration/adjustment results documented in an ISO/GMP-compliant printout; see page 125.

External Calibration in Verified Scales

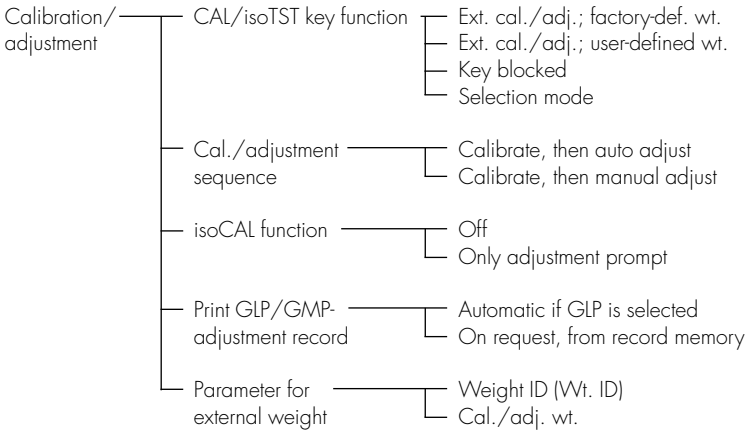
– External calibration is blocked when the scale is used in legal metrology (the menu access switch is sealed off)

> External calibration can be released only after removing verification control seal, which voids the validity of the verification and the scale must be re-verified

– External calibration can now be performed

Preparation

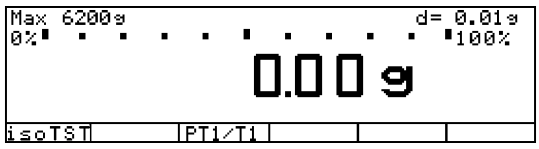
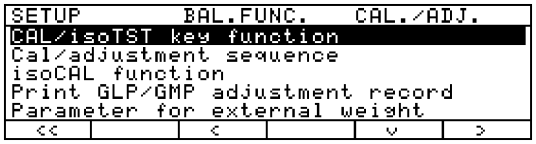
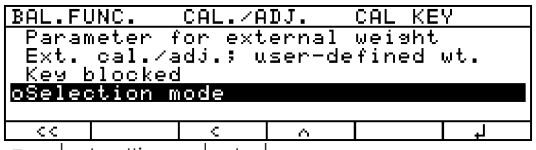
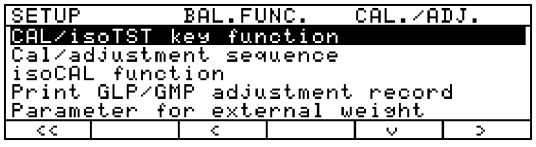
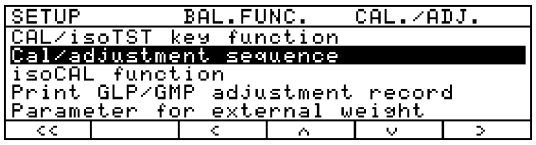
- Select the scale function for "calibration/adjustment": press SETUP to open the Setup menu
- Select the **balance/scale functions**: press the > soft key
- Select **Calibration/adjustment**: press the > soft key

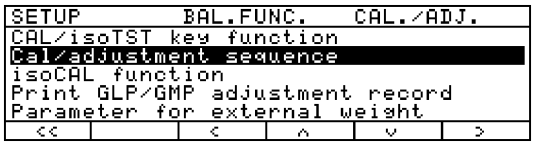
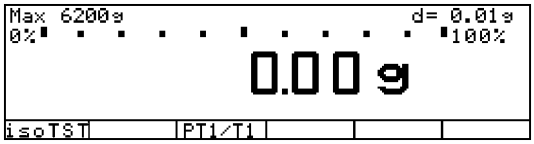


- Save settings and exit Setup menu: press the << soft key

Preparation

Set the parameters for calibration and adjustment; e.g., with manual calibration/adjustment, isoCAL off

Step	Press key(s) (or follow instructions)	Display/Output
1. Switch on the scale, if not already on	I/⏻	Sartorius logo and self-test 
2. Select the Setup menu	SETUP	
3. Select "Balance/scale functions"	> soft key	
4. Select "Calibration/adjustment"	> soft key	
5. Select CAL/isoTST key function	> soft key	 o = last setting selected
6. Select desired function and confirm (e.g., "Ext. cal./adj.; factory-def. wt.")	^ soft key, repeatedly, if necessary ↵ soft key	
7. Exit CAL/isoTST key function	< soft key	
8. Select "Cal./adjustment sequence"	v soft key	

Step	Press key(s) (or follow instructions)	Display/Output
9. Confirm calibration and adjustment sequence	> soft key	o = last setting selected
10. Select other settings, if desired and confirm (e.g., Calibration with manual adjustment)	v and ↵ soft keys	
11. Exit Cal./adjustment sequence	< soft key	
12. Save settings and exit the Setup menu	<< soft key	

Calibration and Adjustment Sequence

In the Setup menu, you can configure the scale so that:

– calibration is always followed automatically by adjustment **`Calibrate, then auto adjust or`**

– you have the choice of ending the sequence or starting adjustment after calibration **`Calibrate, then manual adjust`** (factory setting)

If no deviation is determined in calibration, or the deviation is within the tolerance limits dictated by the degree of accuracy you require, it is not necessary to adjust the scale. In this case, you can end the calibration/adjustment sequence after calibration. There are 2 soft keys active at this point:

– **`Start`** to start adjustment

– **`End`** to end the sequence

External Calibration/Adjustment with a User-Defined Calibration Weight

In the Set up menu (Balance/scale functions: Calibration/adjustment: CAL/isoTST key function), you need to set **`Ext. cal./adj.: user-defined wt.`** or select this using the **`Selection mode`** (factory setting).
You can define a weight for calibration/adjustment. External calibration/adjustment must be performed with weights that are traceable to a national standard and that have error limits that are no greater than 1/3 of the required tolerance of the display accuracy.

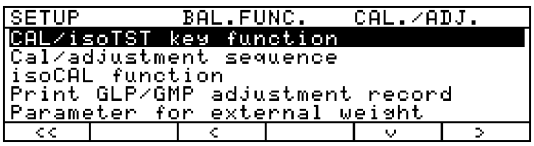
Sequence of external calibration (adjustment: see left column). First select External adjustment: User-def. wt.

The scale has a factory-set weight value (see "Specifications").

To reset a user-defined calibration weight to the original factory setting:

○ Enter the factory-defined value manually (see next page).

Define the Calibration Weight

Step	Press key(s) (or follow instructions)	Display/Output
1. Select Setup menu	SETUP	
2. Select "Balance/scale functions"	> soft key	
3. Select "Calibration/adjustment"	> soft key	
4. Select parameter for external weight	v soft key 5 x > soft key	
5. Select "Cal./adj. wt."	v soft key	 3000 = last setting selected
6. Enter calibration weight (e.g., 5000 g) and save	5 0 0 0	
7. Save the calibration weight	↵ soft key	
8. Exit the Setup menu	<< soft key	

Calibration/Adjustment Printout

Data Block Printout

You can have the results of a calibration/adjustment procedure printed out. You can configure whether the printout is generated as soon as the procedure is completed, or whether a number of calibration/adjustment procedures (up to 50) are collected for a data block printout.

Data Block Printout of Calibration/Adjustment Data

With the following Setup menu configuration, you can store the data from up to 50 calibration/adjustment procedures and have it printed on request:

– GLP/GMP adjustment record
  On request, from record memory

When the memory contains 50 data records:

– additional records are output automatically

If at least one data block printout data record has been configured, the following soft keys are available after you press the **CAL/isoTST** soft key:

Info The number of records is displayed in the text line

PrtPro Print accumulated records

DelPro Delete accumulated records; records can only be deleted after a printout has been generated. If a password has been assigned in the Setup: Input menu, you must enter either the configured password or the General Password (40414243) before you can delete the records.

For internal calibration/adjustment, the initialization mode of the procedure is printed in the **Start** line.

```
----------------------
13.05.2000       09:17
       SARTORIUS
Model            FCT01-X
Ser. no.      60419914
Vers. no.     01-41-02
ID
--------------------
24.04.2000       12:03
Start:            manual
Diff. +       0.01 g
External calibration
              completed

27.04.2000       11:53
Start:         Ext.cal.
W ID
Nom    +     200.00 g
Diff. +       0.01 g
External adjustment
              completed
Diff. +       0.00 g
----------------------
13.05.2000       09:17
Name:
----------------------
```

GLP header

List of Calibration/Adjustment Procedures:
Example 1:
External calibration

Example2:
External calibration/adjustment

GLP footer

Restoring the Factory Settings

Each parameter has a factory setting. To restore the factory settings, select the following item in the Setup menu and select **YES** to confirm:

– Restore all factory settings in the Setup menu (**Factory settings**)

Application Programs

Soft Key Functions

Start	Start application
Weighing	Toggle to the basic weighing function

Auto-Start Application When the Power Goes On

In the Setup menu, you can select whether the application that is active before you turn off the power will automatically start when the power is turned on again (Setup: Application parameters: Auto-start app. when power goes on: On)

Using Verified Scales as Legal Measuring Instruments in the EU*:

You can select any application program on a verified scale. Non-metric weights are identified by the following symbols:

– Percent = %
– Piece count (counting) = pcs
– Calculated values = ⚠

* including the Signatories of the Agreement on the European Economic Area

Toggle between Two Weight Units R1 R2

Purpose

With this application program, you can switch the display of a weight value back and forth between two weight units by pressing a soft key.

You can use this application in combination with any program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics).

Features

– Toggling the displayed weight
– Setting the display accuracy
– Other features as for the basic weighing function

Preparation

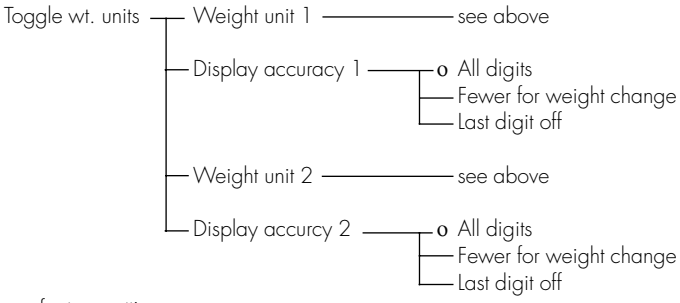
The available units depend on the A/D converter configuration.

On scales used as legal measuring instruments in the EU*, grams, kilograms and tons are the only weight units available

Standard scales: All weight units listed below:

Unit	Conversion factor	Display/ Printout	Line for metrological data
Grams	1.00000000000	g	g
Kilograms	0.00100000000	kg	kg
Carats	5.00000000000	ct	ct
Pounds	0.00220462260	lb	lb
Ounces	0.03527396200	oz	oz
Troy ounces	0.03215074700	ozt	ozt
Hong Kong taels	0.02671725000	tlh	tlh
Singapore taels	0.02645544638	tls	tls
Taiwanese taels	0.02666666000	tlt	tlt
Grains	15.43235835000	GN	GN
Pennyweights	0.64301493100	dwt	dwt
Milligrams	1000.00000000000	mg	mg
Parts per Pound	1.12876677120	/lb	lb
Chinese taels	0.02645547175	tlc	tlc
Momme	0.26670000000	mom	M
Austrian carats	5.00000000000	K	K
Tola	0.08573333810	tol	tol
Baht	0.06578947437	bat	bat
Mesghal	0.21700000000	MS	MS
Tons	0.00000100000	t	t

- Select the "Toggle weight units" application in the Setup menu: press SETUP
- Select **Application parameters**: press the v soft key 2 x, then the > soft key once
- **Application 1 (basic settings)**: press the > soft key
- Select **Toggle wt. units**: (repeatedly) press the ^ oder v soft key
- Confirm **Toggle wt. units**: press the > soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the << soft key

* including the Signatories of the Agreement on the European Economic Area

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing (NUM print; S ID),

you can also access the following functions from this application:

Calibration/Adjustment

● Press the **isoTST** soft key

> See "Calibration, Adjustment" for further instructions

Toggling to the Next Application

● Press [D]

> See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

● Press [SETUP]

> See "Configuring the Scale" for further instructions

Turning Off the Scale

● Press [I/⏻]

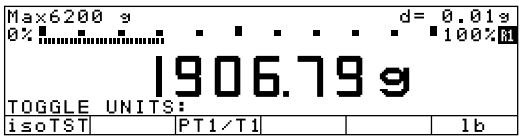
> The scale shuts off

> The display goes blank, then standby or off is displayed with backlighting

Practical Example

Toggle the Display from Grams [g] (1st Unit) to Pounds [lb] (2nd Unit)

Settings (changes in the factory settings required for this example):
Setup: Application parameters: Application 1: Toggle wt. units: Weight unit 2: Pounds/lb

Step	Press key(s) (or follow instructions)	Display/Output
1. Toggle back to the basic unit (**R1**: Weight unit 1)	[CF]	
2. Change weight unit to pounds [lb] (**R2**: Weight unit 2)	**lb** soft key	
3. Change weight unit to grams [g]	**g** soft key	

Counting

Purpose

With the Counting application, you can determine the number of pieces of approximately equal weight.

You can use this application program in combination with a program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics).

Features

- Optional scale configuration in Setup for automatically initializing this application and loading the most recent reference sample quantity "nRef" and average piece weight "wRef" when you switch on the scale (this is the automatic setting when the scale is initialized; Setup menu: Application parameters: Auto-start app. when power goes on: On).
- Reference sample quantity "nRef" entered manually
- Average piece weight "wRef" entered manually
- Storage of the current weight value for the preset reference sample quantity "nRef", to be loaded when the Counting program is initialized
- Setting the accuracy when the reference sample weight "wRef" is stored for calculating a piece count
- Automatic output of the quantity and sample weight via the data interface port after initialization or reference sample updating while running the Counting program (Printout: Application-defined printout: Auto print upon initialization: All values)
- Toggling between piece count and weight value by pressing the **Count.** or **Weigh.** soft key
- Toggling between counting and other applications using the key (for example, checkweighing)

Factory Settings

Accuracy when calculating piece weight: **Display accuracy**

Reference sample updating: **Automatic**

Soft Key Functions

nRef	Store value input as reference sample quantity
wRef	Store input value as reference sample weight
Update	Reference updating criteria met; reference updating can be performed to optimize the accuracy
Count.	Toggle to the Counting application
Weigh.	Toggle to the Weighing mode
Start	Storage of the current weight value for the preset reference sample quantity

Preparation

To calculate a piece count, the average weight of one piece must be known. This average piece weight can be entered into the Counting program in one of three ways:

– Enter the average piece weight using the numeric keys and store it;

– The last reference sample quantity entered is loaded and displayed when you turn on the scale. Place the same number of parts on the scale and initialize the Counting program;

– When the automatic initialization parameter (see previous page) is on (Setup: Printout: Application-defined output: Auto print upon initialization: All values), the scale goes into the "Counting" mode when you turn it on and loads the last average piece weight and corresponding reference sample quantity that were entered or calculated.

Reference Sample Updating

You can have the average piece weight updated during counting (with the piece count displayed) if "AWP update" is set to "manual" or "automatic" in the Setup menu. Manual updating can only be performed when the **Update** soft key is displayed. Reference sample updating must be completed before using an application program from Application 3.

The **Update** soft key is displayed when:

– the scale has stabilized (stability symbol displayed)

– the current piece count is less than double the original piece count

– the current piece count is less than 100

– the internally calculated piece count (e.g., 17.24) differs from the nearest whole number (in this case: 17) by less than ±0.3

Manual reference updating can be repeated several times with an approximately doubled piece count.

○ To perform reference updating: press the **Update** soft key

○ Turn on the scale: press I/⏻

> The Sartorius logo is displayed

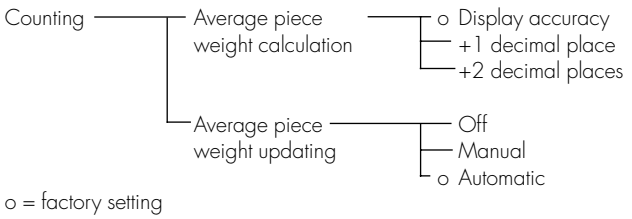
● Select the "Counting" application in the Setup menu: press SETUP

● Select the **Application parameters**: press the **v** key 2 x, then the **>** soft key once

● Select **Application 1 (basic settings)**: press the **>** soft key

● Select **Counting**: repeatedly press the **^** or **v** soft key

● Confirm **Counting**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

● Save settings and exit the Setup menu: press the **<<** soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

● Press the **isoTST** soft key

> See "Calibration/Adjustment" for further instructions

Toggling to the Next Application

● Press D

> See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

● Press SETUP

> See "Configuring the Scale" for further instructions

Turning Off the Scale

● Press I/⏻

> The scale shuts off

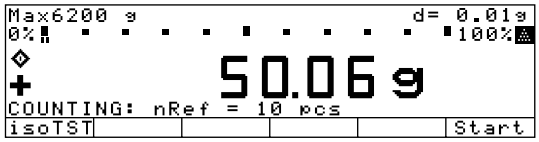
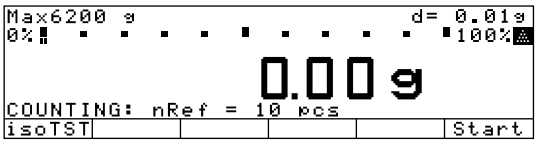
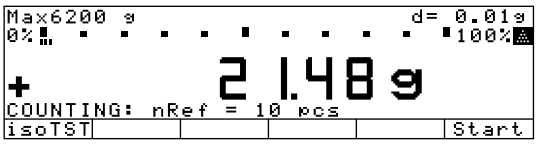
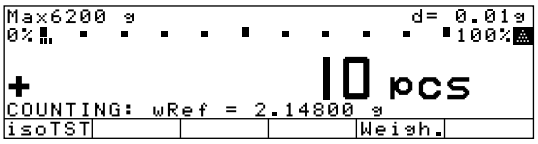
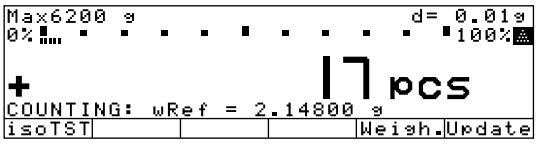
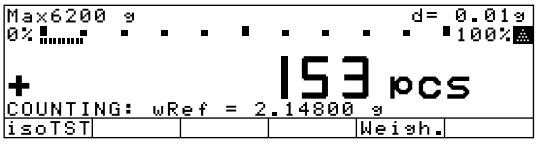
> The display goes blank, then standby or off is displayed with backlighting

Practical Example

Determining an Unknown Piece Count; Weighing-In the Preset Reference Sample Quantity

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 1: Counting: Average piece weight updating: Manual
Setup: Application-defined output: Auto print upon initialization: All values

Step	Press key(s) (or follow instructions)	Display/Output
1. Delete previous values if necessary	CF	
2. Prepare a container for the parts to be counted	Place the empty container on the scale	
3. Tare the scale	TARE	
4. Place the reference sample quantity on the scale (example: nRef = 10 pcs)	Place the displayed number of parts in the container	
5. Determine the average piece weight (Number of decimal places displayed depends on the scale model)	**Start** soft key	 nRef + 10 pcs wRef + 2.14800 g
6. If necessary, increase the number of parts and perform reference sample updating (example *7* additional parts)	Place additional parts in the container **Update.** soft key	 nRef + 17 pcs wRef + 2.14800 g
7. Weigh uncounted parts	Place parts to be counted in the container	
8. If desired, print total piece count (here: 153 pcs)	⊙	Qnt + 153 pcs

Weighing in Percent %

Purpose

This application program allows you to obtain weight readouts in percent that are in proportion to a reference weight.

You can use this application in combination with any program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics).

Features

- Reference percentage "pRef" loaded from long-term memory when you turn on the scale
- Automatic initialization of this application and loading the most recent reference percentage "pRef" entered with reference weight "Wxx%" when you turn on the scale (Setup: Application parameters: Auto-start app. when power goes on: On)
- Value displayed as:
  - Residual quantity (portion)
  - Difference (deviation)
  - Ratio1
  - Ratio2

  depending on the selected Setup menu code
- Reference percentage "pRef" entered manually
- Store the current weight as the reference percentage weight "Wxx%" for initializing the weighing-in-percent application program
- Reference weight "Wxx%" entered manually
- Parameter for "Weight storage accuracy" (rounding-off factor) for storing the reference weight "W100%" in percentage calculation can be configured
- Configuration of decimal places displayed with a percentage
- If selected in the Setup menu, automatic output of the reference weight »Wxx%« and reference percentage in the text line and via the data interface port after initialization of the weighing-in-percent program (Setup: Printout: Application-defined output: Auto print upon initialization: All values)
- Toggle the display between percentage and weight readout by pressing the **Weigh.** or **Perc.** soft key
- Toggle between the weighing-in-percent program and other applications (e.g., checkweighing) by pressing

Factory Settings

Storage parameter:
Display accuracy

Digits displayed with percentage:
2 digits

Display calculated value:
Residue

Soft Key Functions

pRef	Store value input as reference percentage
Wxx%	Store input value as reference sample weight
Perc.	Toggle to the weighing-in-percent application
Weigh.	Toggle to weighing function
Start	Strore current weight value for preselected percentage
New	Store the next value

Preparation

To calculate a value in percent, the reference percentage must be known. This value can be entered into the weighing-in-percent program in one of three ways:

– The last reference percentage entered is loaded and displayed when you turn on the scale. Place the corresponding weight on the weighing platform and initialize the weighing-in-percent program;

– With automatic initialization switched on (see previous page), the scale goes into the "weighing in percent" mode when you turn on the power and loads the last reference percentage entered as well as the corresponding reference weight (Setup: Printout: Application-defined output: Auto print upon initialization: All values);

– Enter the reference weight using the numeric keys and store it (**Wxx%** soft key).

● Turn on the scale: press I/⏻

> The Sartorius logo is displayed

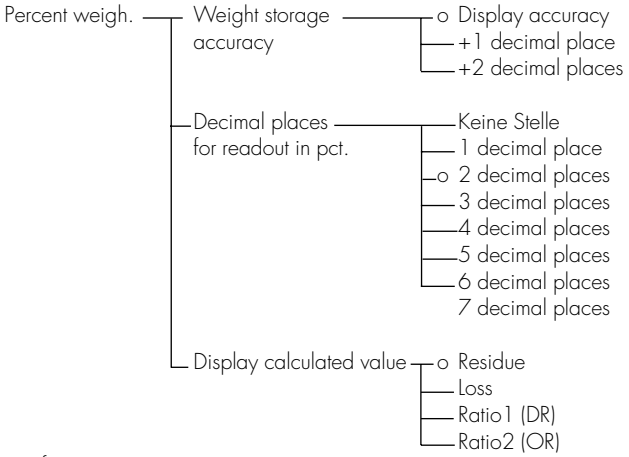
● Select the "Percent weigh" application in the Setup menu: press SETUP

● Select **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once

● Select **Application 1 (basic settings)**: press the **>** soft key

● Select **Percent weigh.**: repeatedly press the **^** or **v** soft key

● Confirm **Percent weigh.**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

● Save settings and exit the Setup menu: press the **<<** soft key

Equations

Residue, Loss, Ratio 1 and 2 are calculated corresponding to the following equations:

Residue = Current weight / 100% weight x 100%
Loss = (Current weight – 100% weight) / 100% weight x 100%
Ratio1 = (100% weight – current weight) / current weight x 100%
Ratio2 = 100% weight / current weight x 100%

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

● Press the **Cal/isoTST** soft key

> See "Calibration/Adjustment" for further instructions

Toggling to the Next Application

● Press ⟲

> See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

● Press SETUP

> See "Configuring the Scale" for further instructions

Turning Off the Scale

● Press I/⏻

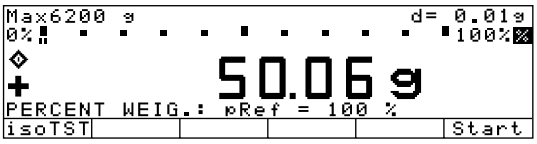
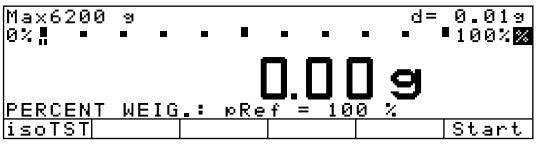
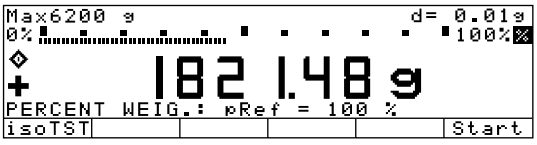
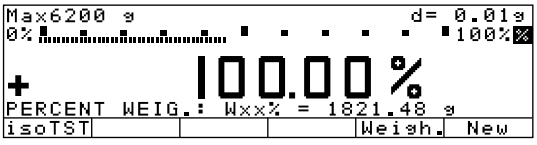
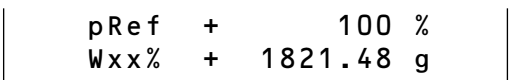
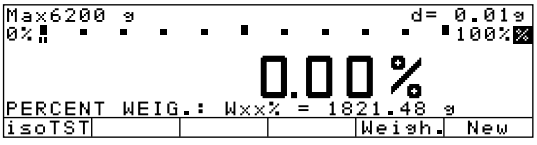
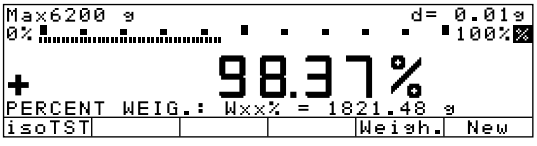
> The scale shuts off

> The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example P1: Weighing in Percent with Reference Weight Taken from Weight on Scale

Settings (changes in the factory settings required for this example):

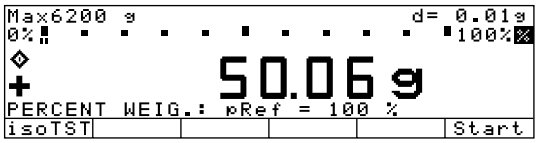
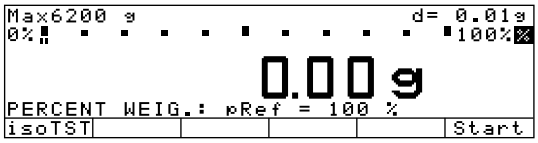
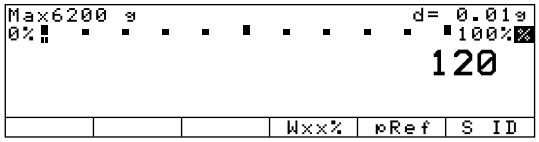
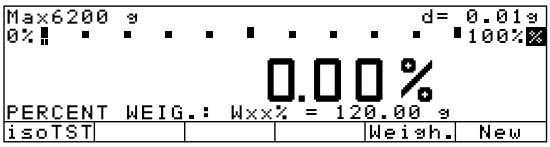
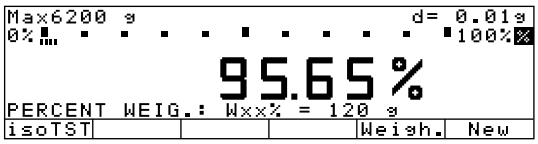
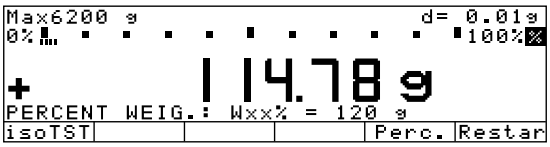
Setup: Application parameters: Application 1: Weighing in percent
Setup: Printout: Application-defined output: Auto print upon initialization: All values

Step	Press key(s) (or follow instructions)	Display/Output
1. Delete previous values, if necessary	CF	
2. Prepare a container for the parts	Place the empty container on the scale	
3. Tare the scale	TARE	
4. Place the reference weight on the scale (here: (1821.48 g equals 100%)	Place weight equal to reference weight in the container	
5. Initialize the scale	**Start** soft key	 
6. Unload the scale	Remove reference sample from the container	
7. Determine the percentage of an unknown weight	Place sample to be measured in the container	
8. If desired, print percentage (in this case: 98.37%)	⊙	

Practical Example P2: Weighing in Percent with Reference Weight Entered Using the Numeric Keys

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 1: Weighing in percent
Setup: Printout: Application-defined output: Auto print upon initialization: All values

Step	Press key(s) (or follow instructions)	Display/Output
1. Delete previous values, if necessary	CF	
2. Prepare a container for the parts	Place the empty container on the scale	
3. Tare the scale	TARE	
4. Enter the reference weight using the numeric keys (here: 120 g)	1 2 0	
5. Store the reference weight	**Wxx%** soft key	 Wxx% + 120.00 g
6. Determine the percentage of an unknown weight	Place sample to be measured in the container (in the case: 114.78 g)	
7. Toggle to weight display	**Weigh.** soft key	

Animal Weighing

Purpose

Use this program to determine the weights of unstable samples (e.g., live animals) or to determine weights under unstable ambient conditions. In this program, the scale calculates the weight as the average of a defined number of individual weighing operations.

You can use this application in combination with any program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics).

Features

- Animal weighing started manually or automatically
- Automatic start:
  - when a defined threshold has been exceeded (minimum load threshold: 10; 20; ...; 500; 1,000 digits)
  - when three successive sub-weights lie within a user-defined tolerance range (calm; normal; active; 0.1%; 0.2%; ...; 50%; 100% of the animal/object)
- Manual start:
  - also possible when the load is under the minimum load threshold
  - when three successive sub-weights lie within a user-defined tolerance range (calm; normal; active; 0.1.%; 0.2%; ...; 50%; 100% of the animal/object)
- Optional scale configuration in the Setup menu for automatically initializing this application when you turn on the scale (Setup: Application parameters: Auto-start application when power goes on: On)
- Number of weighing operations for calculation of an average (**mDef**) can be entered before the beginning of each animal weighing operation
- The factor for calculation of the result can be set before the beginning of each animal weighing operation
- The number of subweighing operations remaining to be performed is indicated in the text display during weighing
- Arithmetic average displayed as a stable result in the pre-set weight unit (identified by the ⚠ symbol)
- Optional multiplication of the arithmetic average by a user-defined factor **Mul**.

  A circle **o** is displayed as the weight unit and **Mul = xxx** is shown in the text line
- Toggling between the animal weight and the calculated value by pressing the **xNet** soft key and the **xRes** soft key
- Automatic output of results via the interface port:
  - Number of weighing operations **mDef**
  - Multiplication factor **Mul**
- Automatic output of results (printout) via the interface port:
  - Weighing result **xNet**
  - Calculated result **xRes**

  The following options have to be set: Printout: Application-defined output: Auto print upon initialization: All values
- The unload threshold is equal to one-half the threshold for the minimum scale capacity
- Return to weighing mode by unloading the scale; i.e., when the load is below the unload threshold

Factory Settings

Animal activity:
5% of the animal/object

Start: **Automatic**

Minimum load for automatic storage:
100 digits

Decimal places in result display:
2 decimal places

Printout: **Average weight only**

Soft Key Functions

New	Automatic start: – Unload scale and weigh next animal, if desired – Press key to start next subweigh Manual start: Start next subweighing
mDef	Store user-defined number of subweighing operations for averaging
Mul	Store user-defined factor as multiplication factor for calculated the arithmetic mean
xNet	Toggle to the animal weight
xRes	Toggle to the calculated animal weighing result
Start	Activate Animal weighing

Printout for Animal Weighing

Upon completion of the averaging process, you can have the results printed out automatically. You can also have both the weight and the calculated result printed.

```
mDef          10
Mul      0.00347
xNet  +   153.00 g
xRes  +     5.30 o
```

mDef: Number of subweighing operations for averaging

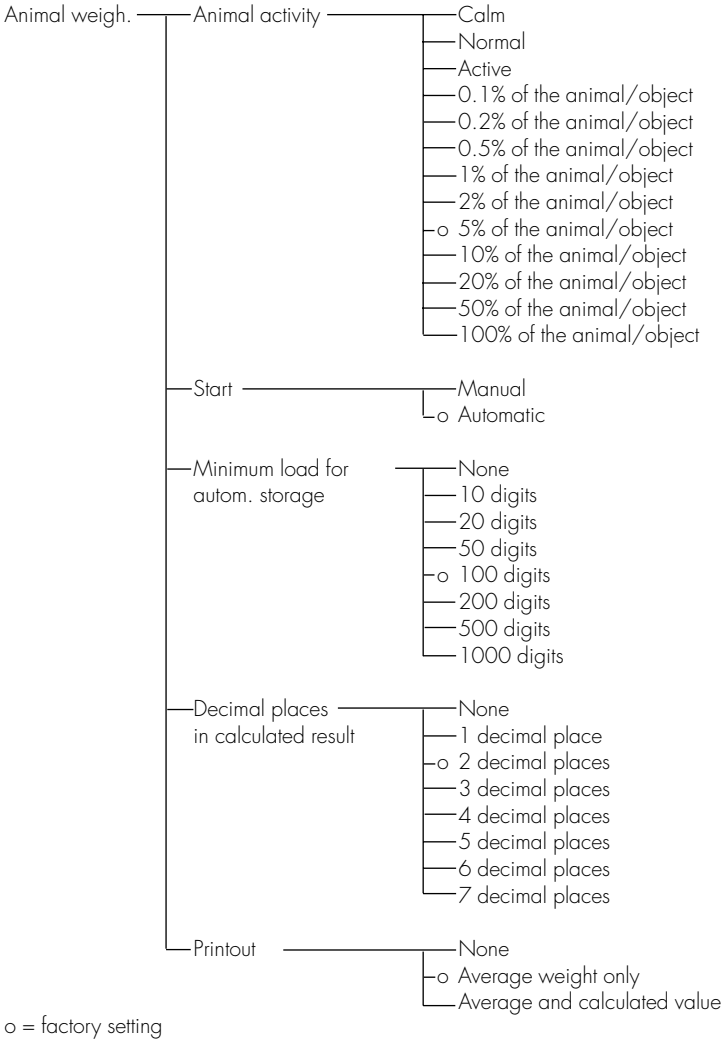
Mul: Multiplication factor

xNet: Result of averaging

xRes: Calculated result

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed
- Select the "Animal weighing" application in the Setup menu: press SETUP
- Select `Application parameters`: press the `v` soft key 2 x, then the `>` soft key once
- Select `Application 1 (basic settings)`: press the `>` soft key
- Select `Animal weigh.`: press the `^` or `v` soft key (repeatedly, if necessary
- Confirm `Animal weigh.`: press the `>` soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the `<<` soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the `isoTST` soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to the Next Application

- Press ⏻D

> See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

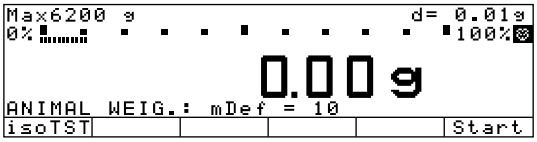
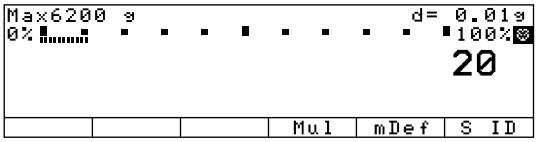
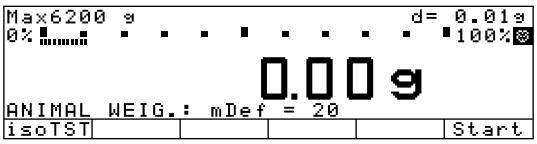
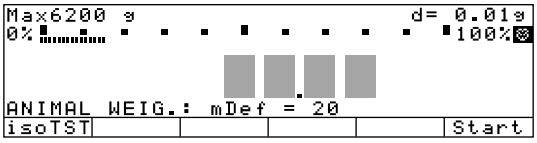
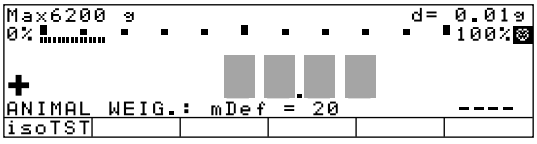
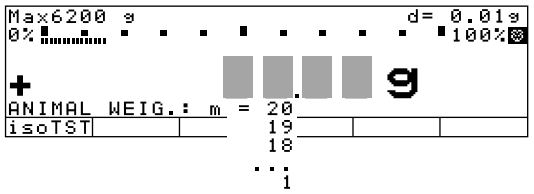
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

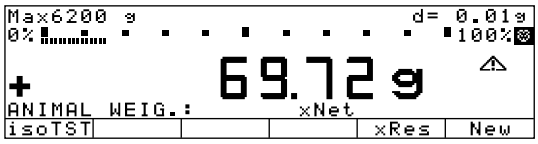
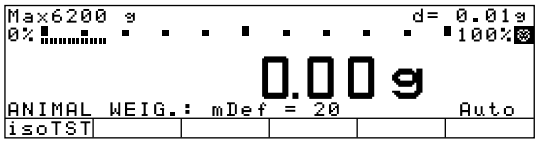
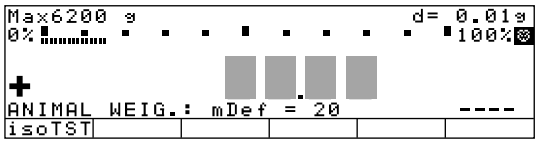
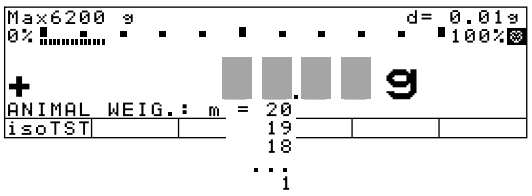
Practical Example

Determining Animal Weight with Automatic Start of 20 Subweighing Operations for Averaging; Automatic Printout of the Number of Subweighing Operations and of the Animal Weight

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 1: Animal weighing: Animal activity: Active
Setup: Application parameters: Application 1: Animal weighing: Decimal places in calculated result display: 2 decimal places
Setup: Application parameters: Application 1: Animal weighing: Printout: Average and calculated values
Setup: Printout: Application-defined output: Auto print upon initialization: All values

Step	Press key(s) (or follow instructions)	Display/Output
1. Delete previous values, if necessary	CF	
2. Prepare a container (cage)	Place empty cage on the scale	
3. Tare the scale	TARE	
4. Enter number of subweighing operations for averaging	2 0	
5. Save number	**mDef** soft key	
6. Weigh the first animal	Place 1st animal in cage	Weight value fluctuates due to animal activity 
7. Start automatic animal weighing	**Start** soft key	
The scale delays starting the subweighing operation until three successive subweights lie within the range defined for an "active" animal	When this criterion is met, the subweighing series begins	

Step	Press key(s) (or follow instructions)	Display/Output
After 20 subweighing operations the arithmetic average (xNet) will be displayed (**mDef**: no. of subweighs **Mul**: calculation factor **xNet**: arithm. average, net value **xRes**: calculated value)		 mDef 20 Mul 1 xNet + 69.72 g xRes + 69.72 o
8. Unload the scale	Remove animal from cage	
9. If desired, weigh next animal	Place animal in cage	
Next weighing series begins automatically		

Recalculation

Purpose

With this application program you can compensate for over-poured components in formulation.

If a component is over-poured when weighing in the individual formulation components, the mixture already poured cannot be used in its current composition. To avoid having to discard the materials weighed, you can adjust the proportions of the formulation to compensate for the over-pour.

When you use this application, the scale mainly controls the recalculation procedure.

You can use this application program in combination with a program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, statistics) as well as with the other extra functions.

Features

- Individual components (up to 99) weighed in with a readout showing from »0« to the desired component weight
- Transaction counter shows the next component expected
- Weighed components are stored, followed by automatic printout and taring
- Additive weighing of components with printout
- Toggle the display between component weight and total formulation weight (additive mode) after first component is stored
- Stored component weight displayed as true net weight for 2 seconds
- Enter a divisor before or during component weighing. For example, if the formulation has a total weight of 100 g, enter the divisor 10 to weigh in a total formulation of 1,000 g
- If a component is over-poured, you can use the recalculation function to change the amount of this component indicated in the formulation by using plus or minus keys or numeric input; the scale calculates a factor by which all components amounts will then be adjusted
- Recalculation factor displayed in the text line, with a warning symbol if the factor is not equal to 1
- All components displayed with number and the amount (by weight) to be added in follow-on filling; components displayed in sequence by the scale.
- Display of actual net weight during follow-on filling
- After the amounts of the components already weighed have been corrected, weighing continues according to the adjusted formulation amount; the readout is recalculated (updated) according to the divisor
- You can repeat the over-pour correction procedure as often as necessary, in case other components are over-poured
- After follow-on (corrective) filling, the total amount differs from that given for the formulation, but the proportion of components in relation to each other is the same
- You can have the weight printed after each measurement
- Individual component weights are printed as "Compxx."
- Press CF to exit the application program. The component memory is cleared and the sum of components printed as "S-Comp."
- Toggle between the recalculation program and other applications (e.g., checkweighing) by pressing .

Factory Settings

Printout: Application-defined output:
Auto print upon initialization:
`All values`

Line format:
`for other apps/GLP`
`(22 characters)`

Soft Key Functions

`Comp.xx`	Store component weighed-in
`Add.xx`	Store weighed-in component in additive weighing mode
`Div.`	Store divisor before or during component weighing
`Recal.`	Start correction procedure for recalculation
`→Add./ →Comp.`	Toggle display between component weight and total weight (additive mode)
`Comp.`	Store numeric input for recalculation
`Minus`	Set value given for the formula
`Plus`	Set value given for the formula

Preparation

- Turn on the scale: press I/⏻
> The Sartorius logo is displayed
- Select the "Recalculation" application in the Setup menu: press SETUP
- Select `Application parameters`: press the `v` soft key 2 x, then the `>` soft key once
- Select `Application 1 (basic settings)`: press the `>` soft key
- Select `Recalculation`: press the `^` or `v` soft key, repeatedly if necessary
- Confirm `Recalculation`: press the `<` soft key
- Save settings and exit the Setup menu: press the `<<` soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input), and – if recalculation has been completed (otherwise Err 10 will be shown) –

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the `isoTST` soft key
> See "Calibration/Adjustment" for further instructions

Toggling to the Next Application

- Press ⏻D
> See the section on the corresponding application program for further instructions

Setup (setting parameters)

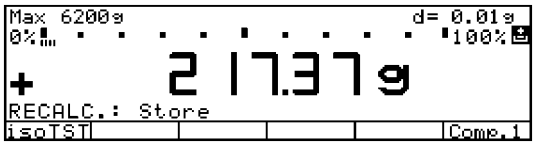
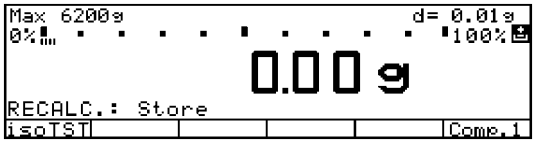
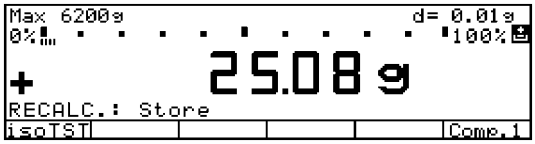
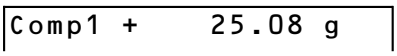
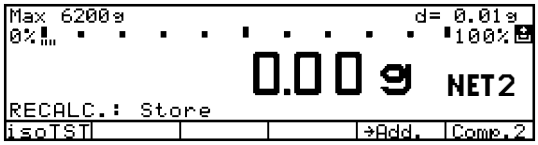
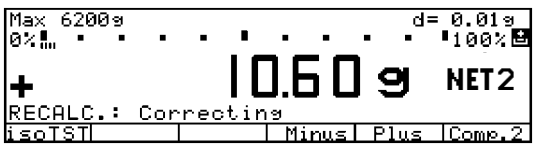
- Press SETUP
> See "Configuring the Scale" for further instructions

Turning Off the Scale

- Press I/⏻
> The scale shuts off
> The display goes blank, then OFF

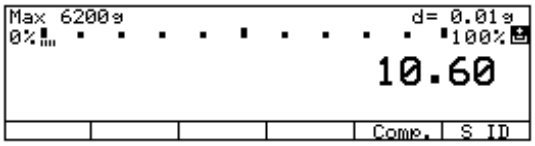
Practical Example

When weighing in formulation components, the second component is over-poured.
Settings (changes in the factory settings required for this example):
Setup: Application parameters: Application 1: Recalculation.
Setup: Printout: Autoprint upon initialization: Only main values

Step	Press key(s) (or follow instructions)	Display/Output
1. Delete previously stored values, if necessary	CF	
2. Place container for filling components on the scale	Place empty container on the scale	
3. Tare the scale	TARE	
4. Add the first component	Weigh the first component into the container	
5. Store component	Press ther **Comp.1** soft key	
		
6. Add the second component	Weigh the second component into the container	
7. Start recalculation, because 10.73 g were not poured, rather only 10.60 g	**Recalc** soft key	
8. Either press the minus or plus key to correct the value…	**Minus** soft key repeatedly	

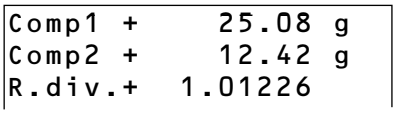
… or enter the desired value

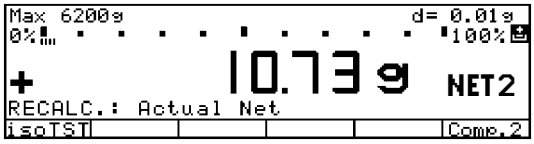
1 0 · 6 0



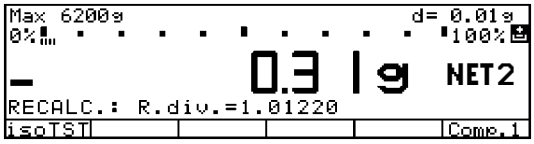
9. Confirm the new value

Comp. soft key





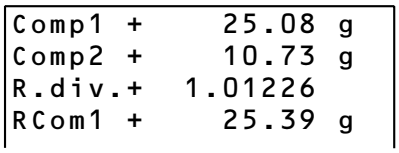
Follow-on filling amount for first component is displayed



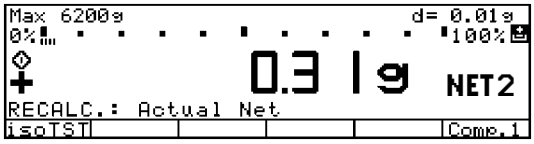
10. Follow-on filling of 1st component and store

Weigh the 1st component "0" towards zero

Comp.1 soft key



The actual net value is displayed for 2 seconds



11. Weigh in further components, if called for in the formula as needed

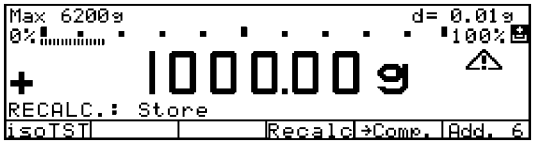
Repeat steps 4 and 5

12. Toggle to the additive mode, if required

→Add. soft key

13. Add further components as required…
(here, for example, up to the total weight of the formula: 1000 g)

Add components to container

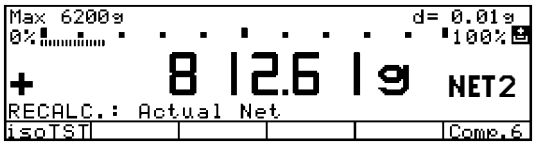


14. … and store
(here, e.g., the 6th component)

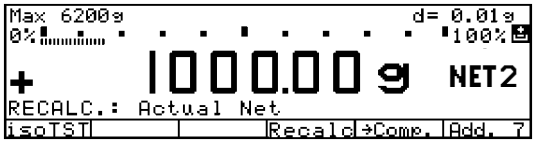
Add.6 soft key

```
Comp1 +     25.08 g
Comp2 +     10.73 g
R.div.+   1.01226
RCom1 +     25.39 g
Comp3 +     22.03 g
Comp4 +     31.49 g
Comp5 +    107.50 g
Comp6 +    812.61 g
```

The actual net value (of the 6th component) is displayed for 2 seconds



Then the total weight is displayed

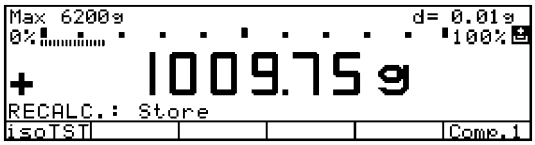


15. Total weight is printed

CF

```
Comp1 +     25.08 g
Comp2 +     10.73 g
R.div.+   1.01226
RCom1 +     25.39 g
Comp3 +     22.03 g
Comp4 +     31.49 g
Comp5 +    107.50 g
Comp6 +    812.61 g
Tot.cp+   1009.75 g
```

Total weight is displayed
Component memory is cleared



Calculation

Purpose

With this application program you can calculate a weight value using an algebraic equation. This can be used, for example, to determine the weight per unit area or "gsm" weight (grams per square meter) of paper.

You can use this application in combination with any program chosen from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics).

Features

- You can store an equation and configure the Setup menu to initialize this program automatically with the stored equation (Setup: Application parameters: Auto-start app. when power goes on: On)
- The "o" symbol is displayed to indicate a calculated value; the equation used is displayed in the text line
- If no equation was entered, the weight value is displayed
- Toggle between the weight readout, equation input and display of the calculated result by pressing the corresponding soft keys (or press CF to toggle between weight and calculated value)
- There are four operators (+, –, *, /) and one factor (weight value) available when you enter an equation
- Max. equation length: 28 characters
- Pressing CF will delete either the equation or the last character entered, depending on the configuration in the Setup menu (Setup: Device parameters: Keys: CF function for inputs: Delete last character; see also »Configuring the Scale«)
- The calculated result is displayed with the number of decimal places configured in the Setup menu. Not all decimal places are displayed if the result is longer than the display allows. If there are more digits before the decimal point than the display can show, an error message is displayed
- The equation is stored in non-volatile memory

Factory Settings

Decimal places in calculated result:
`2 decimal places`

Soft Key Functions

`Equat.`	Toggle to equation
`+`	Enter an addition operator in the equation
`–`	Enter a subtraction operator in the equation
`*`	Enter a multiplication operator in the equation
`/`	Enter a division operator in the equation
`Start`	Start calculation
`Weigh`	Toggle to the weighing mode
`Weight`	Enter a weight operand in the equation

Printout for Calculation

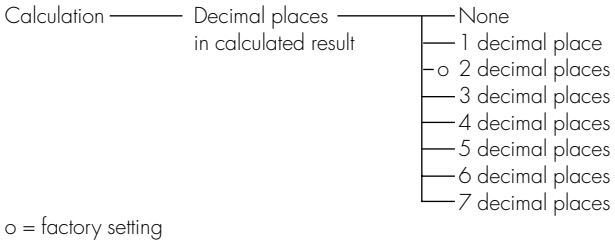
The calculation result is printed.

```
Res   +   693.88 o
```

Res: Result of calculation with equation

Preparation

- Turn on the scale: press I/⏻
> The Sartorius logo is displayed
- Select the "Calculation" application program in the Setup menu: press SETUP
- Select the **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Application 1 (basic settings)**: press the **>** soft key
- Select **Calculation**: press the **^** or **v** soft key, repeatedly, if necessary
- Confirm **Calculation**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key
> See "Calibration/Adjustment" for further instructions

Toggling to the Next Application

- Press ⏎
> See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
> See "Configuring the Scale" for further instructions

Turning Off the Scale

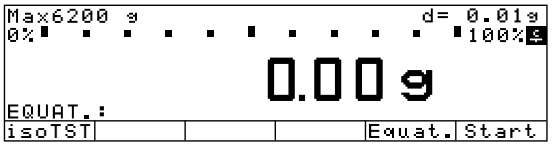
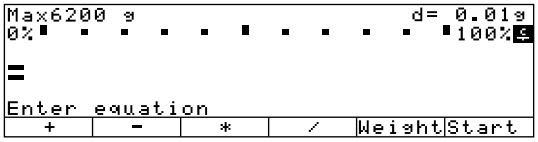
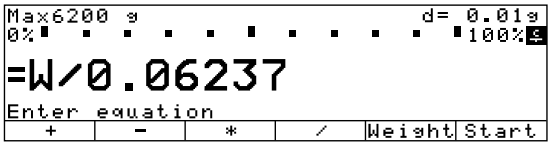
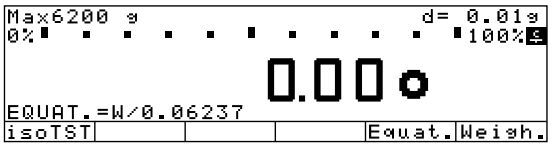
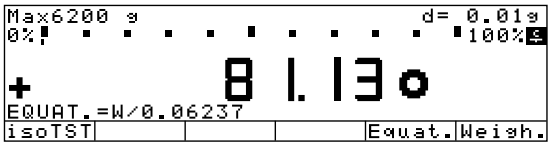
- Press I/⏻
> The scale shuts off
> The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

Calculate the weight per unit area (grammage or gsm weight) of paper: determine the gsm of a sheet of A4 paper with the dimensions 0.210 m x 0.297 m = 0.06237 m². The gsm weight is a product of the division of the weight by the surface area.

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 1: Calculation

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete previous values, if necessary	CF	
3. Tare the scale	TARE	
4. Select equation input	**Equat.** soft key	
5. Enter weight value Enter division sign Enter the area of a sheet of A4 paper	**Weight** soft key / soft key · 0 6 2 3 7	
6. Turn on the calculated result display	**Start** soft key	
7. Determine the gsm weight	Place A4 sheet on the scale	

Differential Weighing ⏎

Purpose

This application program enables you to compare samples before and after a given treatment (such as drying or ashing) and determine the difference in weight.

There are different procedures available for this application:

- Collect all data (tare, initial weight, and backweighing result) for each sample individually (menu setting "Weighing sequence: Individual weighing")
- Save the tare weights and initial weights for all samples first, then perform backweighing (menu setting "Combined weighing")
- Save the tare weights for all samples first, then determine the initial weight of each sample and, finally, perform backweighing (serial weighing)

Features

- 4 different sequences for measuring the tare weights, initial sample weights and the backweights (backweighing result):
  - Individual weighing
  - Consecutive individual weighing
  - Combined weighing
  - Serial weighing
- Choice of weighing sequence by selecting this parameter in the Setup menu or by pressing the **Wg.seq** soft key (if the "Weighing sequence key" option is set)
- Perform up to 99 backweighing routines on a single sample
- Differential weighing with or without tare weighing (not necessary for measuring coatings or lamination layers)
- Define the number of decimal places displayed for calculated results
- Define whether autosaving weight values is dependent on the stability parameter
- Define whether the minimum load for autosave is dependent on the display
- List function, with

  Display page for lots:
  Lists all lots (up to 100 max.) with the number of samples in each lot and the processing status (tare weight, initial weight, backweighed residue ("backweight")
  View, create, rename or delete lots generated
  Enter or change a factor for calculation of results

  Display page for samples:
  Lists all samples (up to 999 max.) with processing status
  View, delete, omit, or include samples

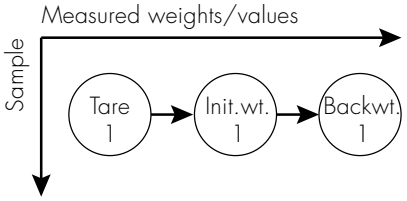
  Display page for measured values:
  Shows date, time, ID and values measured

  Display page for results:
  Values calculated for a sample (backweight, loss, ratio1, ratio2)
- Special display page for statistics lets you define whether lot statistics are dependent on backweight, loss, or ratio values
- Press a soft key to view the desired display page (lots, samples, values or results)
- To view lot, sample or measured value data, enter the ID and then press the corresponding soft key (**Lot/Sample/Values**)
- Define whether printer output is dependent on the processing status of the sample
- Printout can contain individual values, backweighed values and statistics
- User-definable printout format
- The configurations for the weighing sequence and results are saved separately for each lot

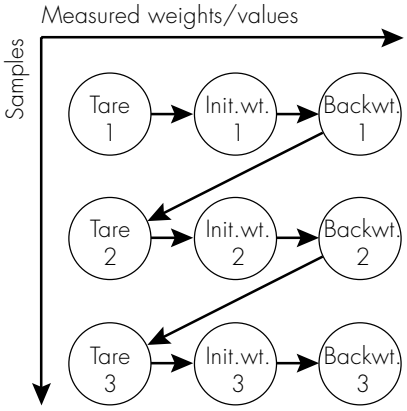
Differential Weighing: Defining the Weighing Sequence

You can choose from among four sequences for measuring tare weights, initial sample weights and backweighed residue ("backweight") during differential weighing:

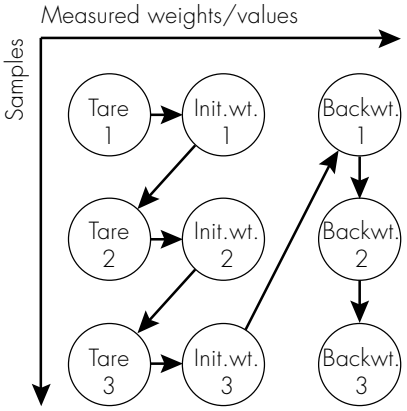
1. Individual Weighing
   Tare weight, initial weight and backweight are measured in that order.



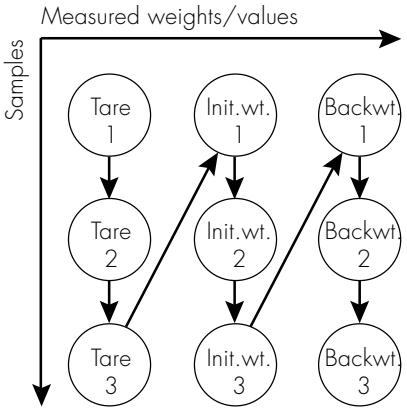
2. Consecutive Individual Weighing
   Several individual weighing routines (see above) are performed in series.



3. Combined Weighing
   The tare and initial weight, in that order, of each sample is measured first, then the backweight of each sample is measured.



4. Serial Weighing
   First the tare weight for each sample is measured, then the initial weight of each sample is measured in the same order that their tare weights were measured, and then all backweights are measured.



You can define the weighing sequence in the Setup menu or by pressing the **Wg.seq** (if the "Weighing sequence key" option is activated).

Factory Settings

Weighing sequence:
Group weighing

Tare weighing: **Yes**

Result with decimal point:
2 decimal places

Autosave values: **No**

Minimum load for autosave:
10 digits

Save statistics: **No**

Generate printout:
Automatic after backweighing

Include sample ID in the text line:
No

Wg. seq. key:
Yes

Clear sample after individual weight, result + unload:
No

Last residual weight saved as the initial weight: **No**

Printout for Differential Weighing

Generating Configured Printouts Automatically

The configured backweighing printout is generated automatically after backweighing, if one of the following settings is selected under Setup: Application 1: Differential weighing: Generate printout:

```
Automatic after
backweighing
Auto after init.weigh +
backweigh
Auto after tare, init.
+backweigh.
```

Generating Configured Printouts Manually

The configured individual printout is generated when the ⊙ key is pressed while there is a tare, initial or backweight on the scale or when ⟲ is pressed to toggle applications.

You can generate the configured printout manually after backweighing if you press the ⊙ key while the display page for the results is shown.

To generate the configured statistics printout, press the ⊙ key

- when the display page for statistics is shown,
- when the samples with a desired number of backweighing operations is selected (for example, statistics on all samples with 2 backweighing operations)

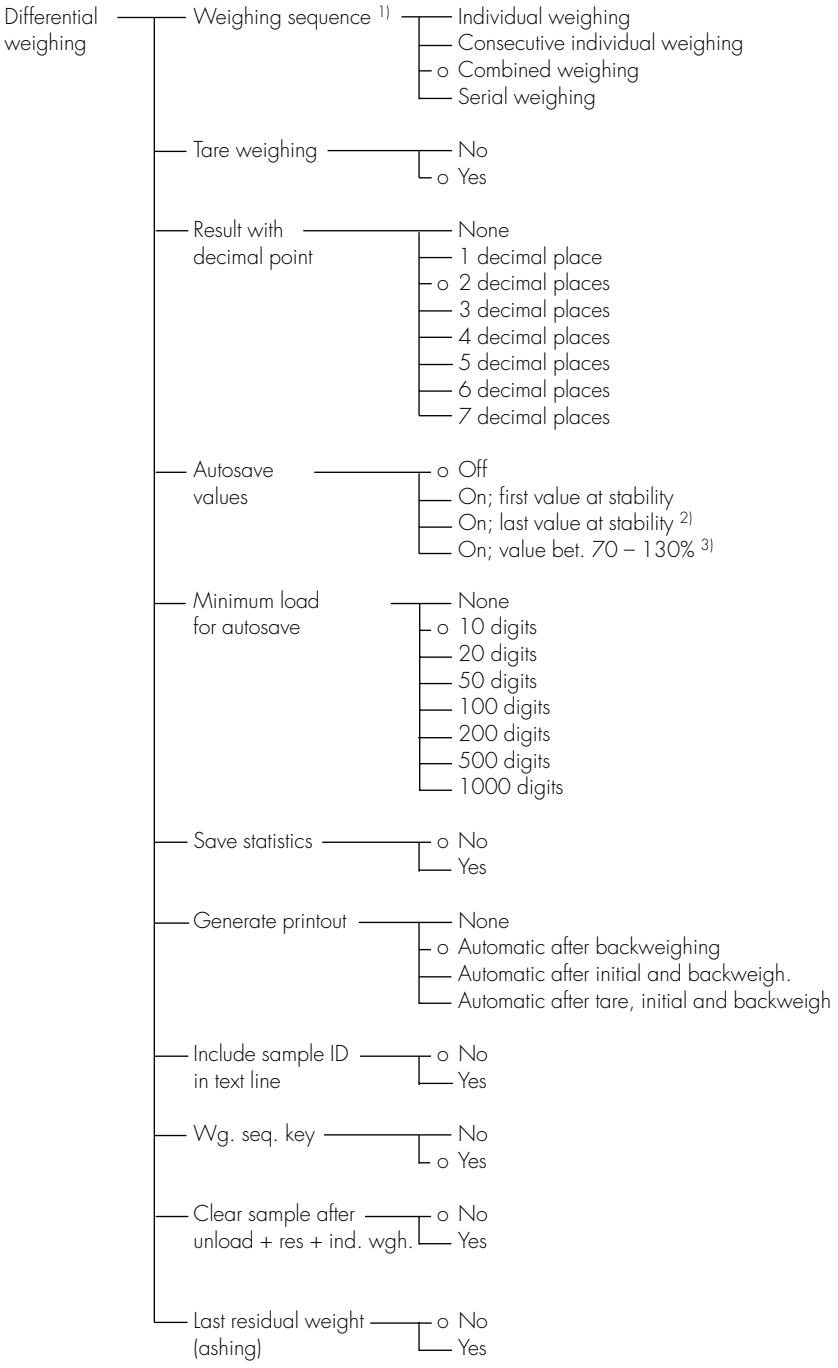
The following printout is generated:

Configured Backweighing Printout (Example)

`----------`	Dotted line
`16.11.1999  14:55:12`	Date/Time
`Lot  CH12345`	Lot ID
`Sample  14`	Sample number
`ID  CX88`	Sample ID
`T1  +  23.45 g`	Tare weighing (with PT1 selected)
`N1  +  125.57 g`	Initial weight
`R  (3)+  103.68 g`	Backweight (residue as weight)
`R  +  82.57 %`	Residue in percent
`D  -  21.88 g`	Loss as a weight
`D  -  17.43 %`	Loss in percent
`Fact  +1.10345`	Calculation factor
`D-Res  -  24.15 o`	Calculated loss
`Ratio1  +  21.11 %`	Ratio 1
`Ratio2  +  121.11 %`	Ratio 2
`----------`	Dotted line

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed; a self-test is performed
- Select the "Differential weighing" application in the Setup menu: press SETUP
- Select the **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Application 1 (basic settings)**: press the **>** soft key
- Select **Differential weighing**: press the **^** or **v** soft key, repeatedly, if necessary
- Confirm **Differtial weighing**: press the **>** soft key



o = factory setting

1) Setting can only be changed when the application is first run and when the **Wg. seq** key option is set to "No"

2) The last value with the stability symbol is saved only during initial sample weighing. Tare and backweights are saved as the "first value at stability". This menu option enables you to perform filling functions during initial weighing.

3) To autosave a value between 70 and 130% of the initialization value, the scale must be unloaded to below 30% or loaded to above 170% of this initialization value.

Equations

Backweight in %: backweight / initial weight* 100%
Loss in weight: backweight – initial weight
Loss in %: (backweight – initial weight) / initial weight * 100%
Calculated loss: (backweight – initial weight) * factor
Ratio 1 in %: (initial weight – backweight) / backweight * 100%
Ratio 2 in %: initial weight / backweight * 100%

Function of the CF Key

Weighing sequence	Status	Press CF	Value deleted status	Subsequent
Individual weighing	Tare weighing	–	–	–
	Initial weighing	1 x	Tare	Tare weighing
	Backweighing	1 x	Initial weight	Initial weighing
		2 x	Tare	Tare weighing
	Results displayed	1 x	Backweight	Backweighing
Consecutive individual weighing	As for individual weighing			
Combined weighing	Tare weighing	1 x	Previous init. weigt	Initial weighing
		2 x	Previous tare value	Tare weighing
	Initial weighing	1 x	Tare	Tare weighing
	Backweighing	1 x	Previous backweight	Previous backweighing
	Results displayed	1 x	Last backweight	Backweighing
Serial weighing	Tare weighing	1 x	Previous tare value	Previous tare weighing
	Initial weighing	1 x	Previous init. weight	Previous initial weighing
	Backweighing	1 x	Previous backweight	Previous backweighing
	Results displayed	1 x	Last backweight	Backweighing

Soft Key Functions

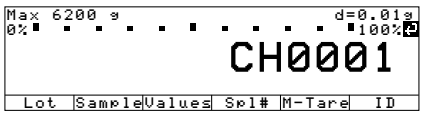
Create Create a new lot
Lot Select/view the display page for lots
Ini.wt. Save initial weight
>Ini.w Go to initial weighing function
Result View display page for results
>Resul Go to display page for results
M-ini Input initial weight value
M-back Input Backweighed residue
M-tare Input tare value
Delete Delete lot/sample
Values Select/view the display page
Sample View the display page for samples
Spl# Select/create sample data record
Backw. Save backweight value
>Backw Go to backweighing function
Omit Omit sample
Stat. View display page for statistics
Tare Save tare value
>Tare Go to tare weighing function
Wg.seq Select weighing sequence

Direct Selection of Lot/Sample/Value

When the measured values are displayed, you can enter numbers and letters to:

– change the lot and sample directly (displayed in the text line)
– directly access the display pages for samples and values

● Enter lot/sample/value ID



(in this example, »CH0001«, designates a certain lot)

● Press the corresponding soft key

> **Lot** soft key:
The lot corresponding to the ID entered is displayed (if the lot is not found, the display page for lots is shown)

> **Sample** soft key:
The display page is shown for samples in the active lot that contains the sample number entered

> **Values** soft key:
The values for the sample entered are shown

> **Spl#** soft key:
Change samples without the list function

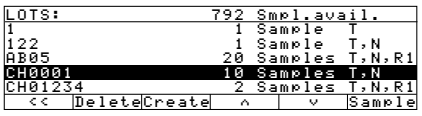
Toggle between Differential weighing/weighing: D1 soft key

Direct Selection of the Weighing Sequence

You can change the weighing sequence (individual weighing, combined weighing, etc.) directly during measurement by pressing the **Wt.seq** key, if this function has been activated in the Setup menu [Application parameters: Application 1: Differential weighing: Weighing sequence key: Yes]

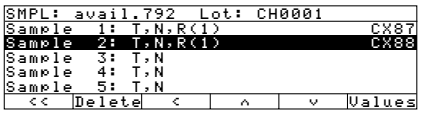
List Function for Differential Weighing

The list function has 4 display pages: one each for lots, samples, values and results.


LOTS: 792 Smpl.avail.
1 1 Sample T
122 1 Sample T,N
AB05 20 Samples T,N,R1
CH0001 10 Samples T,N
CH01234 2 Samples T,N,R1
<< Delete Create ^ v Sample

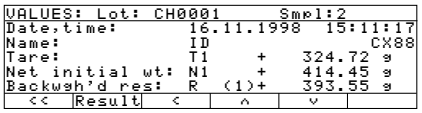
Display Page for Lots

The display page for lots shows all of the lots that have already been created, as well as the number of samples in each lot and the processing status of the selected sample (tare, initial and backweighing). On this display page you can create, rename, delete and print lots. You can also define a factor for calculation of loss; for instance, to have weight per unit area calculated (such as grams per square meter). You can also enter a lot ID alphanumerically to access a lot directly.



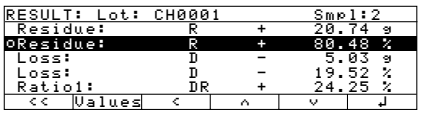
Display Page for Samples

This display page shows the samples contained in a selected lot, as well as the processing status of the samples (tare, initial and backweighing) and the sample IDs. You can also enter a sample ID alphanumerically to access a sample directly.


VALUES: Lot: CH0001 Smpl:2
Date,time: 16.11.1998 15:11:17
Name: ID CX88
Tare: T1 + 324.72 g
Net initial wt: N1 + 414.45 g
Backwgh'd res: R (1)+ 393.55 g
<< Result < ^ v

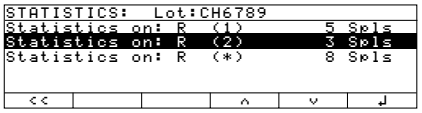
Display Page for Values

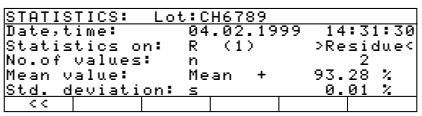
This display page shows the date and time of sampling, as well as the sample ID and the values measured, for a selected sample.



Display Page for Results

This display page shows the calculated values for a selected sample. These include backweighed residue, loss, loss calculated using a factor, and the ratio values. The o symbol indicates the value that is selected for display immediately following a backweighing procedure. To change this setting, use the v and ^ soft keys to move the highlight bar to the desired value, and press ↵ to confirm.





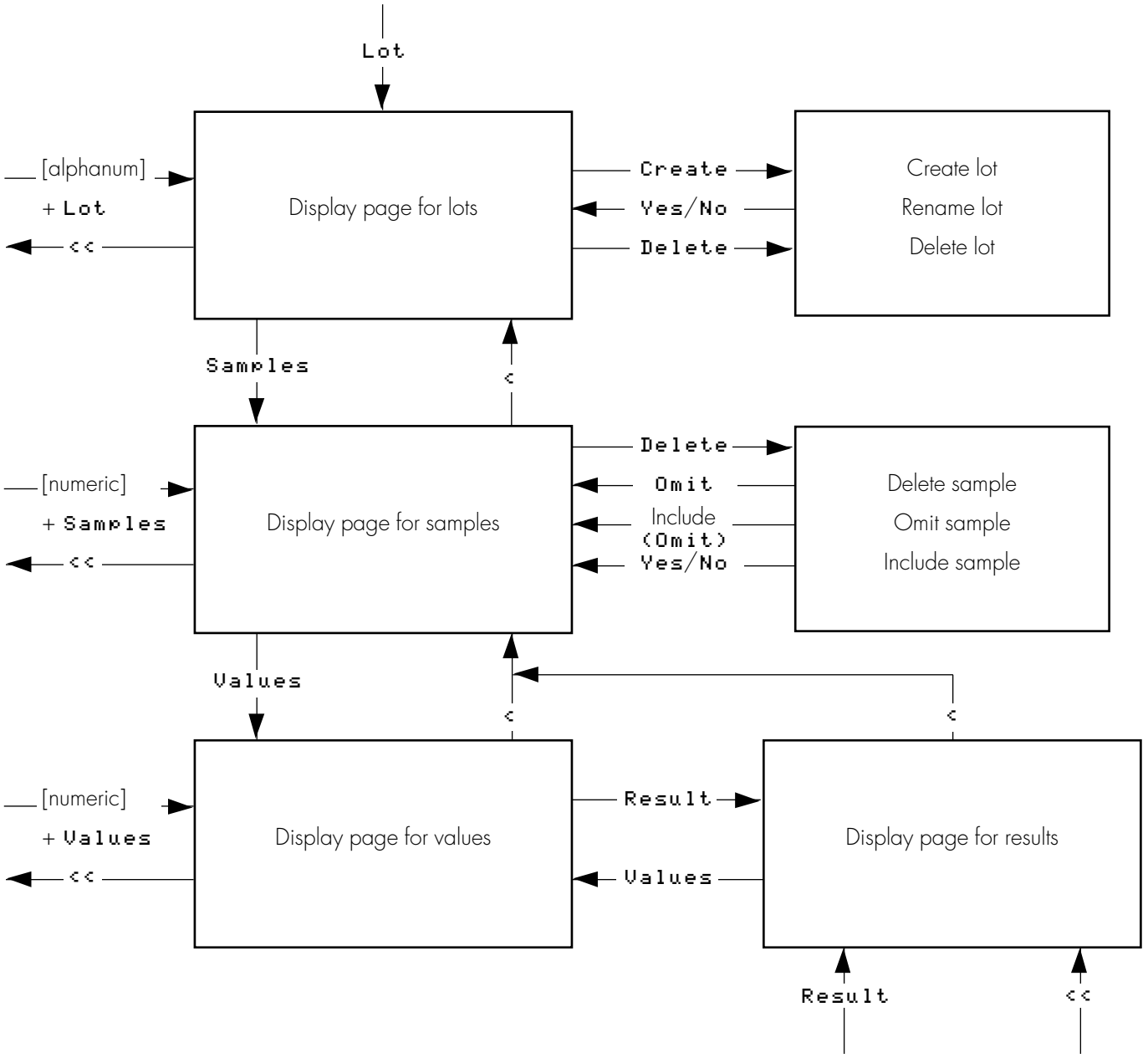
Display Page for Statistics

This page shows the characteristic data for a lot (date; time; statistics on, for example, the backweighed residue; number of samples) as well as the calculated values (mean value, standard deviation).

To select a set of statistics from a lot with different numbers of backweighing procedures:

Press the ↵ soft key to display the selected set of statistics:

Selecting Display Pages in the List Function for Differential Weighing

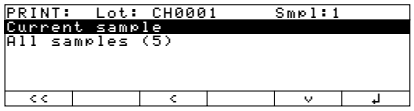


View and Print Display Pages

You can use the manual mode to print display pages (for lots, samples, values and results).

To view and print a display page for values:

- Show the display page for lots: press the **Lot** soft key
- Show the display page for samples: press the **Sample** soft key
- Show the display page for values: press the **Values** soft key
- Print the display page for values: press [⊙]



○ Select amount of data to be included on the printout: press the v or ^ soft key

- Confirm print command: press the ↵ soft key

The display pages for lots and samples can be printed when they are shown on the scale display.

View the Display Page for Results:

- Show the display page for lots: press the **Lot** soft key
- Show the display page for samples: press the **Sample** soft key
- Show the display page for values: press the **Values** soft key
- Show the display page for results: press the **Result** soft key
- Print the display page for results: see instructions for printing the display page for values

You can manually print the display page for statistics when it is shown on the scale

To view the display page for statistics:

- Select statistics: press the **Stat.** soft key

○ For samples each with a different number of backweights: Select the kind of statistics: press the v or ^ soft key

○ Confirm selection: press the ↵ soft key

Deleting or Omitting a Lot or Sample

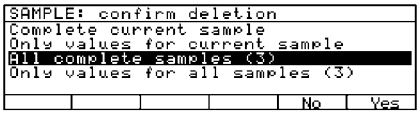
Lots can be deleted; samples can be deleted or omitted.

You can choose between
– deleting the current lot and
– deleting all lots.

You can choose whether
– the active sample is deleted entirely, or
– only the values from the active sample are deleted, or
– all samples are deleted completely, or
– only the values from all samples are deleted, or
– a sample is omitted.

Deleting a Lot/Sample

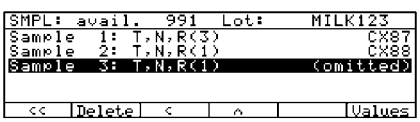
- Activate the display page for lots/samples
- Select the desired lot/sample
- Select the "Delete" function: Press the **Delete** key
- Define the lot(s)/sample(s) to be deleted and confirm
- Select "Yes" to complete the delete function or "No" to cancel it



Example: Deleting all samples completely (in this case, 3 samples)

Omit or Include Sample

- Activate the display page for samples
- Select the desired (or omitted) sample
- Delete: Press the **Delete** key
- Omit: Press the **Omit** key



Example: Sample 3 has been omitted

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input), and

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key

> See the section entitled "Calibration/Adjustment" for further instructions

Setup (Parameter Settings)

- Press the [SETUP] key

> See the chapter entitled "Configuring the Scale" for further instructions

Turning Off the Scale

- Press the [I/⏻] key

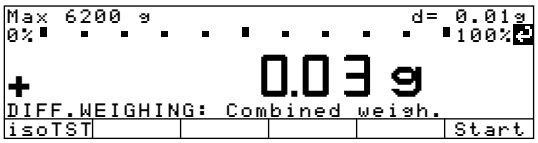
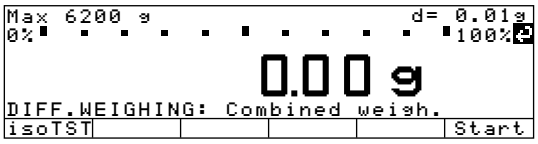
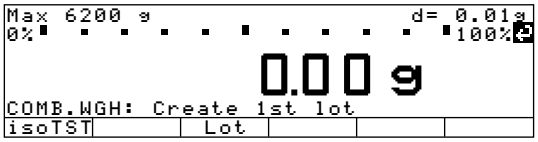
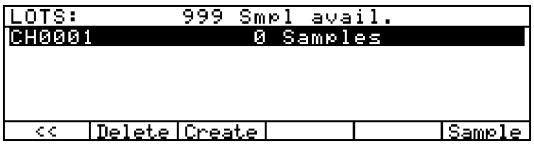
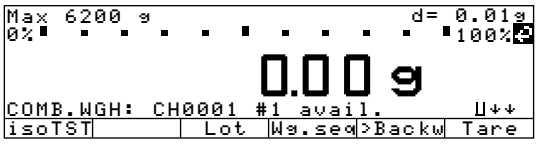
> The scale shuts off

> The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

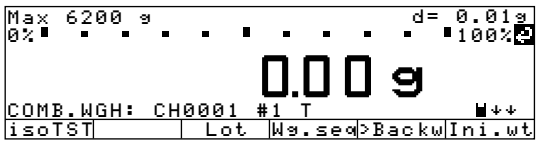
Differential weighing: Combined weighing; create lot, determine the difference in weight between initial weights and backweights of three samples (with autoprint of the formatted backweighing record)

Settings (changes in the factory settings required for this example):
Setup: Application parameters: Application 1: Differential weighing: Combined weighing

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn the scale on, if necessary	I/⏻	
2. Tare the scale, if necessary	TARE	
3. Start combined weighing	**Start** soft key	
4. Select lot ID input	**Lot** soft key	
5. Enter lot ID	ABC 1 … 9 0 ·	
6. Confirm input	↵ soft key	
7. Activate weight readout (or toggle to combined weighing)	<< soft key **Wt.Seq** soft key	
8. Measure 1st tare weight	Place 1st empty container on scale	

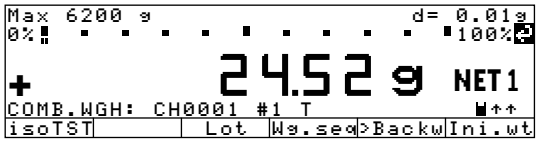
9. Save tare value

Tare soft key
Remove the empty container



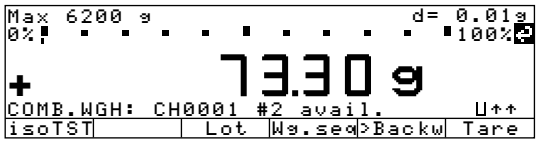
10. Measure the initial weight (in this case: 24.52 g)

Fill the 1st container
Place filled container on scale



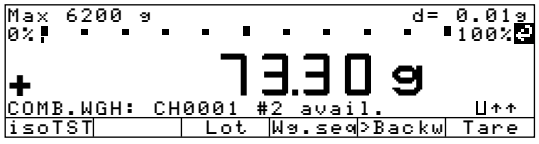
11. Save initial weight value

Softkey **Ini.wt**
Remove the filled container



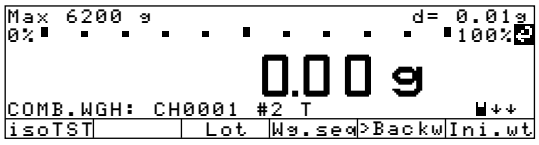
12. Measure the 2nd tare weight

Place 2nd empty container on scale



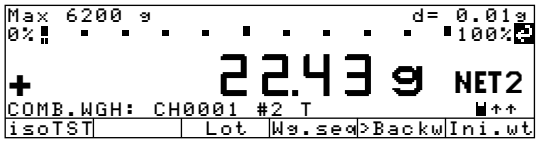
13. Save tare value

Tare soft key
Remove the empty container



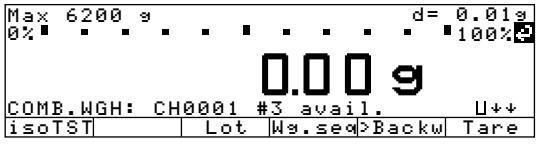
14. Measure the initial weight (in this case: 22.43 g)

Fill the second container
Place filled container on scale



15. Save initial weight value

Ini.wt soft key
Remove the filled container

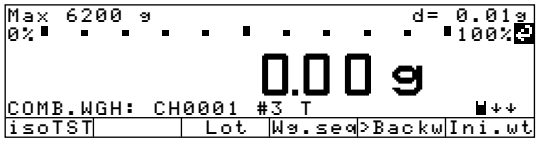


16. Measure the third tare weight

Place the 3rd empty container on scale

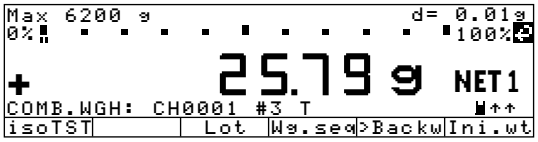
17. Save tare value

Tare soft key
Remove the empty container



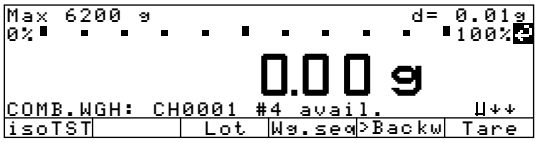
18. Measure the initial weight (in this case: 25.79 g)

Fill the container
Place filled container on scale



19. Save initial weight value

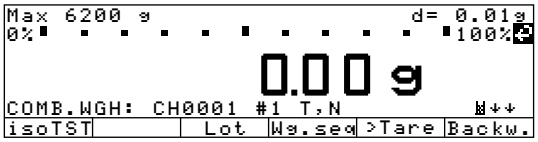
Ini.wt soft key
Removed the filled container



20. Treat the sample

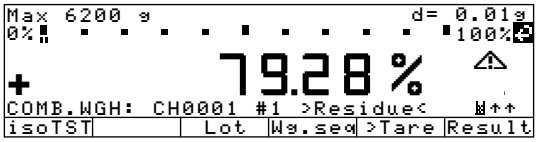
21. Go to backweighing function

>Backw soft key



22. Save the 1st backweight (the value to be displayed is defined on the display page for results; in this case: backweighed residue in %)

Place 1st container on scale
Backw. soft key

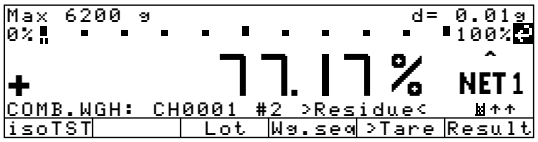


Configured backweighing printout is generated

```
17.11.1998  12:49:23
Lot              CH0001
Sample                1
T1     +    72.07 g
N1     +    24.52 g
R   (1)+    19.44 g
R      +    79.28 %
D      -     5.08 g
D      -    20.72 %
Ratio1+    26.13 %
Ratio2+   126.13 %
--------------------
```

23. Save the 2nd backweight

Remove 1st container
Place 2nd container on scale
Backw. soft key

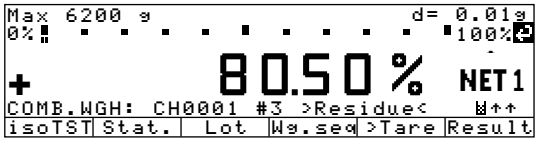


Configured backweighing printout is generated

```
--------------------
17.11.1998  12:52:57
Lot              CH0001
Sample                2
T1     +    73.30 g
N1     +    22.43 g
R   (1)+    17.31 g
R      +    77.17 %
D      -     5.12 g
D      -    22.83 %
Ratio1+    29.58 %
Ratio2+   129.58 %
--------------------
```

24. Save the 3rd backweight

Remove the 2nd container
Place the 3rd container on scale, **Backw.** soft key



Configured backweighing printout is generated

```
--------------------
17.11.1998  12:53:23
Lot              CH0001
Sample                3
T1     +    72.22 g
N1     +    25.79 g
R   (1)+    20.76 g
R      +    80.50 %
D      -     5.03 g
D      -    19.50 %
Ratio1+    24.23 %
Ratio2+   124.23 %
--------------------
```

25. Unload the scale

Remove the 3rd container

Checkweighing %

Purpose

This program is used to check whether a sample corresponds to a pre-set target value or is within a specific tolerance range. In addition to the display in the measured value line, the results are shown on the bar graph and can be routed through the interface port via control lines for further electronic processing.

You can use this application in combination with any program chosen from Application 1 (such as counting, weighing in percent) and one from Application 3 (totalizing, formulation, statistics).

Available Features

- Optional configuration in the Setup menu for long-term storage of target value and tolerance limits
- Optional scale configuration in the Setup menu for automatically initializing this application and loading the values stored in long-term memory for the target value and the upper and lower tolerance limits when you turn on the scale
- You can perform checkweighing
  - without entering a target value, but only upper and lower tolerance limits;
  - as differential checkweighing;
  - with symmetric or asymmetric limits which can be entered as percentages
- Enter the target value and limits by placing a load on the scale or using the numeric keys
- Control parameter in entering target and tolerance values, so that the upper limit ≥ the target ≥ the lower limit ≥1 display increment
- Accuracy of a weight readout or keyboard input as target/tolerance values corresponds to the display accuracy
- Optional scale configuration in the Setup menu for automatic output to the interface port (print application parameters) of the target value and tolerance limits when initialization is completed (Printout: Auto print upon initialization: All values).
- Control range for the scale's data output port lines is 30% to 170% of the target value
- Optional configuration in the Setup menu for activation of control lines dependent on weight value (weight value within checkweighing range, stability reached)
- Toggling the display between weight readout and checkweighing display by pressing the corresponding soft key. If the weight value exceeds tolerances, the line for measured values shows the weight while the checkweighing display shows »LL« for »too low« or »HH« for »too high.«
- Press the **Show** soft key to display target value and tolerance limits in the text line after initializing the application.
- Weight value in bar graph displayed in relation to upper and lower limits and target value
- »OK« transaction counter displayed in the text line (e.g., **n = 4**), if selected (Checkweighing: Automatic printout of OK values: Yes). This counter shows the number of measured values that lie within the tolerance range.
- Optional automatic printout of the weight value when it is within the control range at stability

  After an automatic printout, the printing of OK values is blocked. Before you can generate the next printout, you must unblock the scale by unloading it (weight must be under 30% of the target) or by placing a load on the scale (bringing the weight up to at least 170% of the target).
- Initialization parameters are overwritten after the **Param.** soft key has been pressed
- Press CF to delete the initialization parameters and end the Checkweighing program

Factory Settings

Activation of port lines: **Within checkweighing range**

Type of checkweighing input: **Target, minimum, maximum weight**

Weight display mode: **Absolute value**

Automatic printout of OK values: **No**

Soft Key Functions

Param.	Begin input of target and tolerance values
Show	Display target and tolerance values in succession during checkweighing
LLHH	Toggle to checkweighing display (»LL« for too light and »HH« for too heavy)
Diff.	Display difference between current value and target
Net	Display net weight
Start	Start checkweighing

Auto Print Checkweighing

With the over/under checkweighing application, you can have the result printed automatically as soon as the weight lies within a defined range.

```
N      + 153.00 g
Setp   + 180.03 g
Min    + 160.05 g
Max    + 200.06 g
N      + 165.14 g
```

N: Net weight
Setp: Target weight
Min: Lower limit
Max: Upper limit
N: Printout of "OK" values

Preparation

The checkweighing program often requires a target value for comparison with the current value. This target has a tolerance range, which is defined by absolute weight values. The tolerance range is defined as either an absolute value or a percentage with upper and lower limits. The values defining the limits can be symmetric or asymmetric to the target value. These values can be entered either by storing weights on the scale or by key input.

There are four control lines, called data output port lines, which are activated as follows: (see also the diagram at the right):

– lighter
– equal
– heavier
– set

The control range spans 30% to 170% of the target value. You can configure this parameter in the Setup menu (Application parameters: Application 2: Checkweighing: Activation of port lines:) to select whether the control lines are:

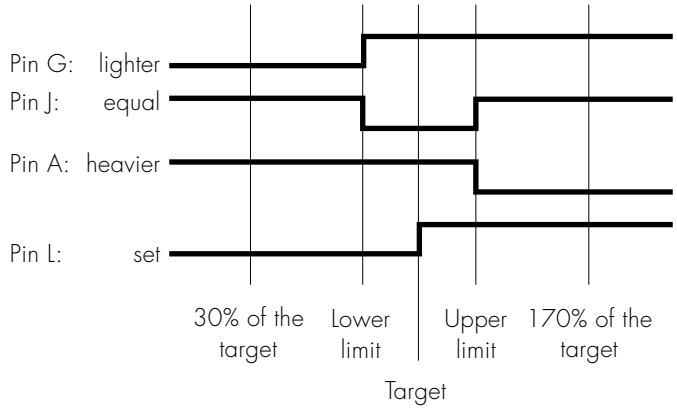
– activated within the checkweighing range
– always on
– activated at stability within the checkweighing range
– activated at stability
– activated at stability within the checkweighing range –> once

This makes it possible, for example, to connect a simple indicator for the weighing results (e.g., three different colors, one each for the weighing results: too light, O.K., too heavy).

Response of Control Lines During Checkweighing

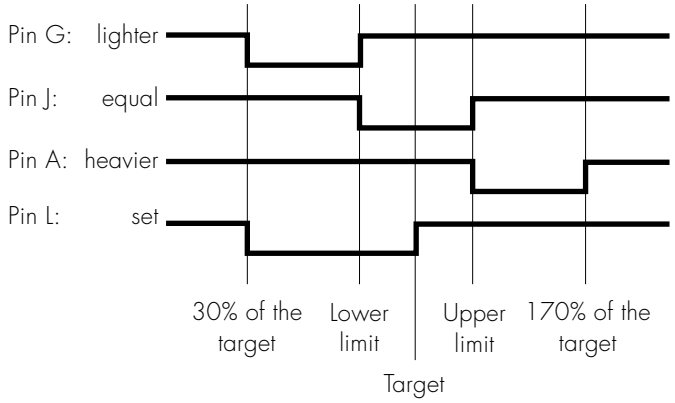
Configurations:
– always on
– activated at stability

12-pin via Zener barrier



Configurations:
– activated within checkweighing range
– activated at stability within checkweighing range
– activated at stability within checkweighing range

12-pin via Zener barrier



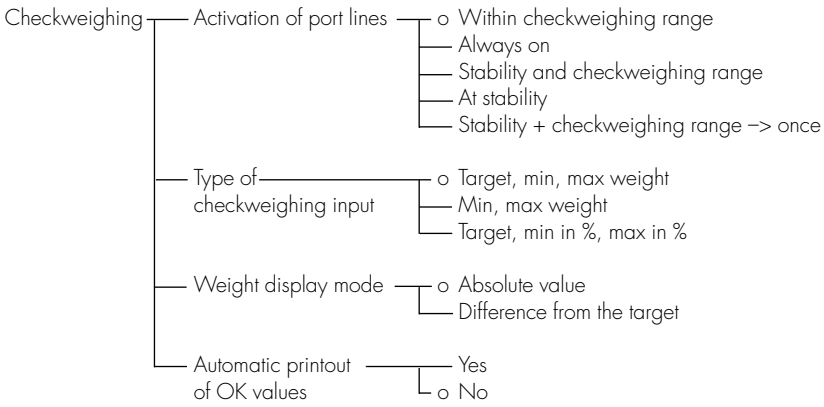
For further information about the pin assignment, see chapter on "Pin Assignment Charts."

Output port specifications
– When not in use, the voltage level is high: >2.4 V/+2mA.
– When activated, the voltage level is low: <0.4 V/-2mA.

⚠ The output ports are not protected against short circuits!

Preparation

- Turn on the scale: Press I/⏻
- > The Sartorius logo is displayed; a self-test is performed
- Select the "Checkweighing" application in the Setup menu: press SETUP
- Select the `Application parameters`: press the `v` soft key 2 x, then the `>` soft key
- Select `Application 2 (control functions)`: Press the `v` soft key, then the `>` soft key
- Select `Checkweighing`: press the `^` or `v` soft key, repeatedly, if necessary
- Confirm `Checkweighing`: press the `>` soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the `<<` soft key

Additional Functions

In addition to the functions for:

– alphanumeric input, (not during initialization),

– taring (not during alphanumeric input)

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the `isoTST` soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to Another Application

- Press D
- > See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

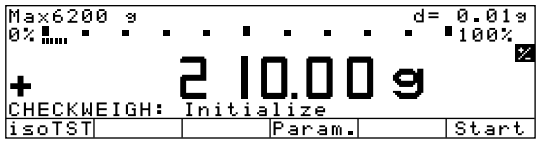
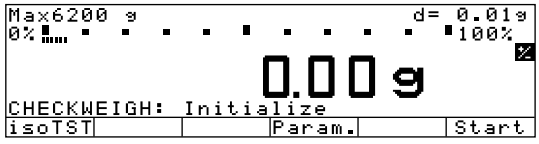
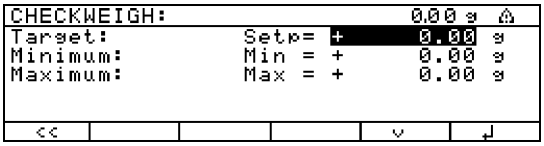
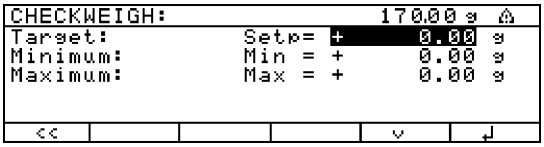
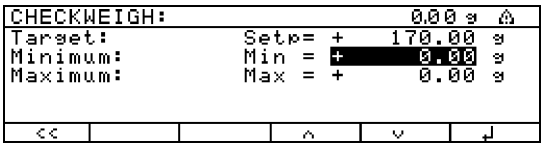
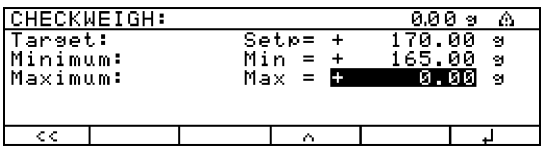
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

Checkweighing samples of 170 g, with an allowable tolerance of –5 g and +10 g. Printout of upper and lower tolerance limits. Weighed values are printed out automatically when stability is reached and the weight value is within the checkweighing range.

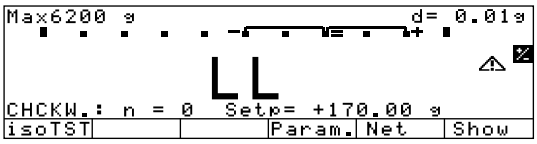
Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 2: Checkweighing: Automatic printout of OK values: On

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete previous values, if necessary	CF	
3. Prepare a container for the samples	Place empty container on the scale	
4. Tare the scale	TARE	
5. Enter initialization values	**Param.** soft key	
6. Accept target value (in this example: 170 g)	Place ideal sample in container	
7. Save target and unload the scale	↵ soft key Remove ideal sample from the scale	
8. Enter value for lower limit (170 g – 5 g) and save	1 6 5 ↵ soft key	

9. Enter value for upper limit (170 g + 10 g) and save

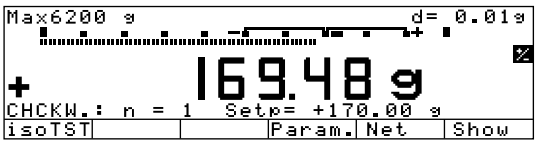
1 8 0
↵ soft key



Setp	+	170.00 g
Min	+	165.00 g
Max	+	180.00 g

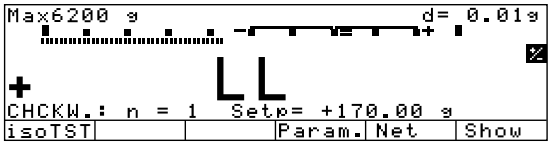
10. Weigh sample (in this case: 169.48 g)

Place sample in container



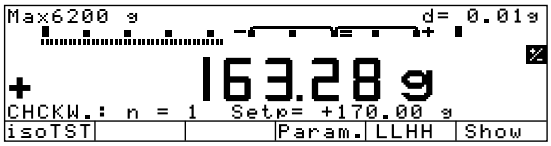
N	+	169.48 g

If the weight value is too low:



11. In this case, switch to net value (for ex., a weight of 163.28 g)

Net soft key



12. Weigh next sample (if any)

Place sample in container

Time-Controlled Functions

Purpose

With this application program, you can configure the scale to perform certain functions (such as automatic printout of values, store value in totalization memory) at a given time or after a set interval.

You can use this application in combination with any program chosen from Application 1 (such as counting, weighing in percent) and one from Application 3 (such as totalizing, formulation).

Features

- Time-controlled activation of scale functions:
  - one time only, at a given time

    (`Setting=` is displayed in the text line)
  - repeatedly, at given intervals (`Interval=` is displayed in the text line before the function is started, and `Repeat =` is displayed after the function has been started)
- Functions that can be time-controlled include:
  - Acoustic signal (beep)
  - Lock in readout
  - Automatic printout of values
  - Store values for totalizing, formulation or statistics
- Print time in addition to weight value
- Store value depending on the stability parameter
- Tare the scale after printout of weight values
- Press the corresponding soft key to cancel time-controlled functions

Factory Settings

Function after time interval:
`Automatic printout of values`

Automatic function restart: `On`

Storage mode:
`Without stability`

Print then tare: `On`

Soft Key Functions

`Stop`	Stop the application
`Quit`	Confirm performed function (e.g., »Lock in readout« or »Beep«)
`Interv`	Store input interval for time-controlled functions
`Set.`	Store input time for one-time performance of function
`Start`	Start timer function

Printout for Time-Controlled Functions

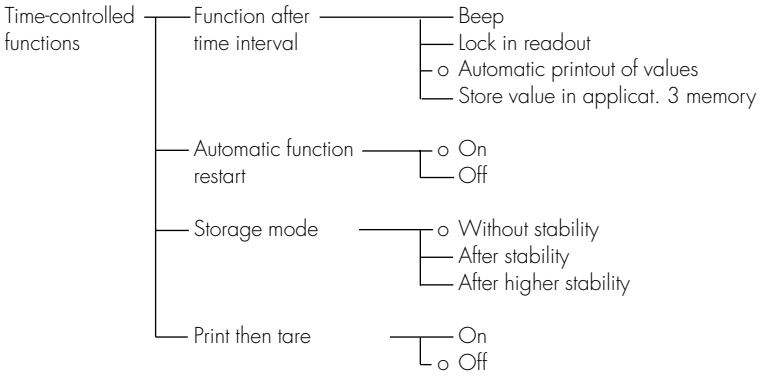
If the »Automatic printout of values« parameter is set, the time and weight (or other value) are printed out.

```
Time:          10:15:00
N      +    150.00 g
```

Time: Time that the values were stored
N: Net weight

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed
- Select the "Time-controlled functions" application in the Setup menu: press SETUP
- Select the **Application parameters**: press the **v** key 2 x, then the **>** soft key
- Select **Application 2 (control functions)**: press the **v** soft key, then the **>** soft key
- Select **Time-controlled functions**: press the **^** or **v** soft key
- Confirm **Time-controlled functions**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Print Net Values without Printout of Time

Select the Setup menu:

Setup: Printout: Application-defined output: Auto print upon initialization: Off

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to Another Application

- Press ⏻D
- > See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

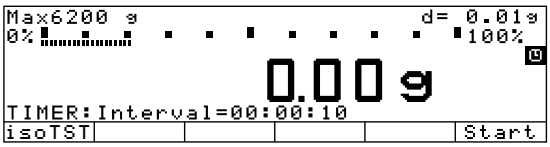
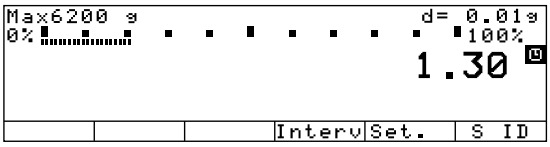
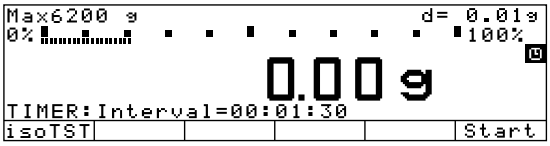
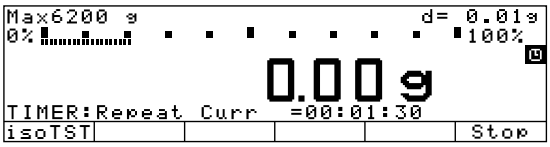
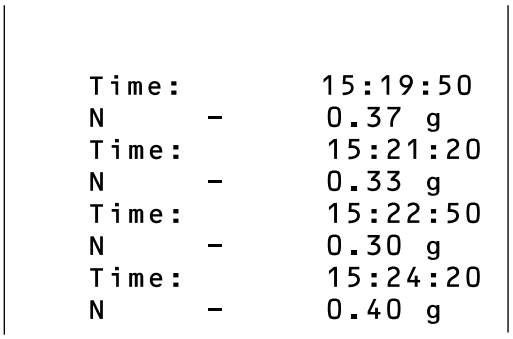
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

Document the evaporated amount of a sample with defined surface, temperature and air pressure at preset intervals of 1 minute, 30 seconds.

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Application 2: Time-controlled functions
Setup: Balance/scale functions: Taring: Without stability
Setup: Printout: Application-defined output: Stability parameter: Without stability

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete stored values, if necessary	CF	
3. Place container with sample on the scale and tare	TARE	
4. Enter time interval: 1 minute, 30 seconds	1 · 3 0	
5. Store time interval	**Interv** soft key	
6. Begin documentation (Time remaining until the next printout is displayed in the text line)	**Start** soft key	
Printout of evaporated amount every 1½ minutes		
7. Stop the documentation procedure	**Stop** soft key	


```
Time:        15:19:50
N      -     0.37 g
Time:        15:21:20
N      -     0.33 g
Time:        15:22:50
N      -     0.30 g
Time:        15:24:20
N      -     0.40 g
```

Totalizing Σ

Purpose

This application program runs as a cumulative memory function.

You can use this application in combination with any program chosen from Application 1 (such as counting, weighing in percent) and one from Application 2 (checkweighing, time-controlled functions).

Features

- Totalization of weight values and calculated values
- Optional configuration in the Setup menu for simultaneous storage of net and calculated values
- Optional configuration in the Setup menu for loading weight values and calculated values either from Application 1 (e.g., counting, weighing in percent) or from Application 2 (checkweighing, time-controlled functions)
- Totalization memory for up to 65,535 values
- Simultaneous display in the text line of transaction counter and, e.g., the current total
- Optional configuration in the Setup menu for having the scale tare automatically after a value is stored in the totalization memory, if no preset tare has been entered
- Manual input of the number of individual weighing operations and confirmation using the **nDef** soft key (target no. of operation nDef). Result printed and memory cleared after printout of nDef.
- Optional configuration in the Setup menu to add the current weight, with display accuracy, to the current total by pressing the **M+** soft key and generate a printout of the result
- Optional configuration in the Setup menu for stability-dependent storage of the measured value: **Balance/ scale functions, Stability range**
- Optional automatic storage of measured values

  Storage of measured value is indicated by →←; ↓↓ indicates that you can place a load on the scale.
- Minimum load threshold for automatic storage
- Press the **M–** soft key to delete the last value added to the totalizing memory. The transaction counter value is reduced by one and a printout is generated.
- Press the **MR** soft key for information about number of transactions and the current total. In the Setup menu, you can define whether the information is displayed and printed, or only printed, and whether the information comprises an intermediate or final evaluation
- In the Info window you can choose which value is displayed in the text line during weighing
- Printout of the end result independent of which program is configured for Application 1 or Application 2. Configure the Setup menu to define which values are included on the printout (printout of individual components)
- Press the key identified by **MR** (soft key label) for a printout of an intermediate evaluation after each addition or a final evaluation
- If you end the totalization process by pressing CF without having first pressed the **MR** soft key for a printout, a final evaluation is printed when you press CF
- Optional configuration in the Setup menu to clear the totalizing memory and reset the transaction counter by pressing CF or after an evaluation is printed out
- Totalization data and transaction counter data are stored in non-volatile memory
- Continue totalization after turning the scale off and back on

Factory Settings of Parameters

Automatic storage: **Off**

Minimum load for automatic storage: **10 digits**

Source of data for auto storage: **Application 1**

Evaluated values: **Net**

Evaluation mode, MR key function: **Intermediate evaluation, print**

M+/M– function, then tare: **Off**

Printout of individual components: **Yes**

Stability range: **2 digits**

Printout: Application-defined output:
Print then tare: **Off**

Soft Key Functions

M+	Add weight values or application values to the total in the totalization memory. The component or transaction counter value increases by one each time you press this key.
M–	Delete the last value added to memory. The transaction counter value decreases by 1. You cannot delete previous values by repeatedly pressing this key.
MR	Print or display an intermediate or final evaluation
nDef	Store the input number of components

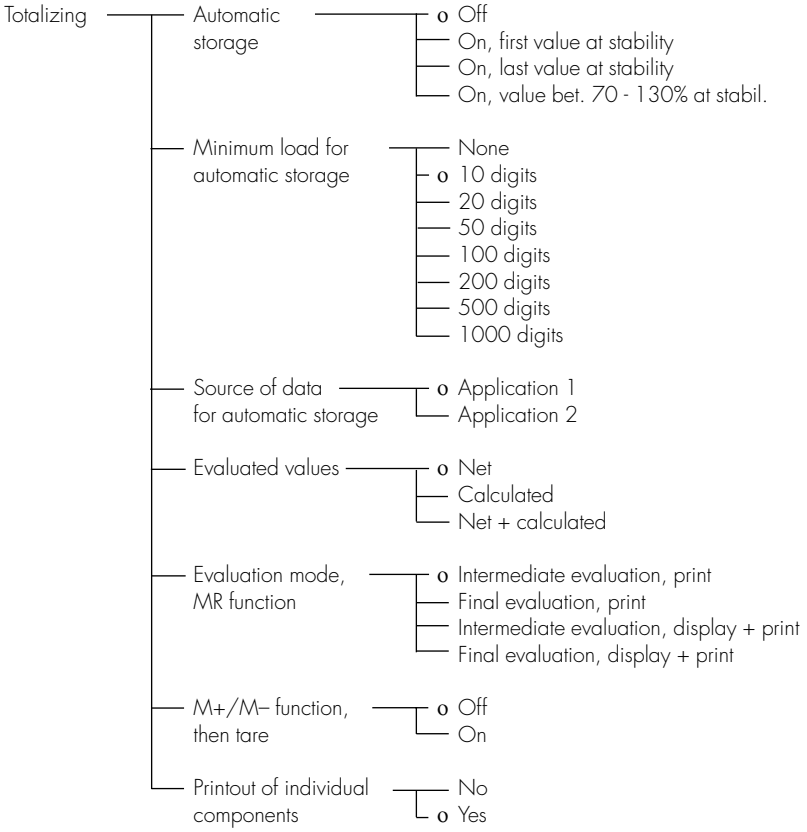
Printout for Totalizing

The transaction or component counter is printed in front of each measured value (weight). When an intermediate or final evaluation is printed out, all results up to this point are included.

```
n              5
Total   +151.67 g
```

Preparation

- Turn on the scale: press I/⏻
- > TheSartorius logo is displayed; a self-test is performed
- Select the "Totalizing" application program in the Setup menu: press SETUP
- Select the **Application parameters**: press the **v** soft key 2 x, then the **>** soft key
- Select **Application 3 (data records)**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Totalizing**: press the **^** or **v** soft key
- Confirm **Totalizing**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to Another Application

- Press ⏻
- > See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

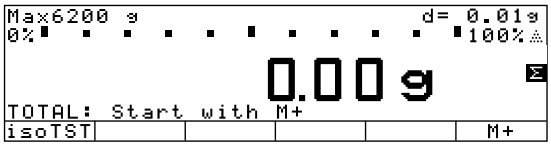
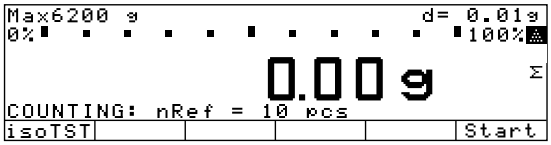
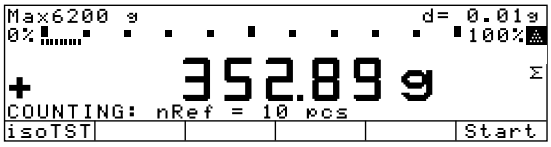
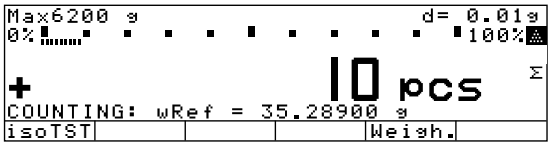
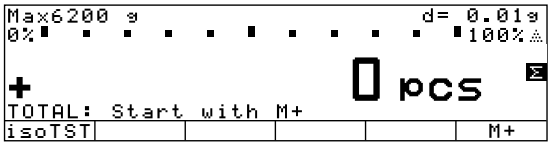
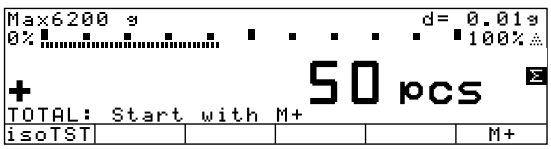
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

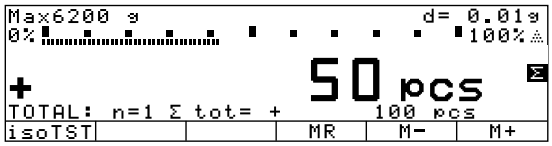
Totalize counted pieces

Settings (changes in the factory settings required for this example):

Setup: App: Application 1: Counting
Setup: App: Application 2: Off
Setup: App: Application 3: Totalizing: Evaluated values: Net + calculated
Setup: App: Application 3: Totalizing: Evaluation mode, MR function: Final evaluation, display + print

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete old totalization data, if necessary	CF	
3. Tare the scale	TARE	
4. Toggle to Application 1: Counting	⏻	
5. Place the displayed number of parts on the scale (here: 10 pcs)	Place parts to be counted on the scale	
6. Initialize the Counting application	**Start** soft key	 nRef 10 pcs wRef 35.28900 g
7. Remove the reference sample quantity and toggle to Totalizing	Unload the scale ⏻	
8. Place a number of parts on the scale (here: 50 pcs)	Place parts on the scale	

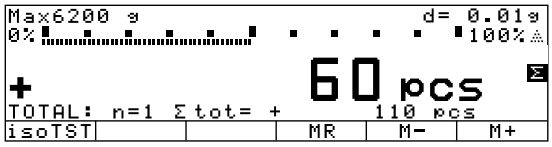
9. Store piece count — **M+** soft key



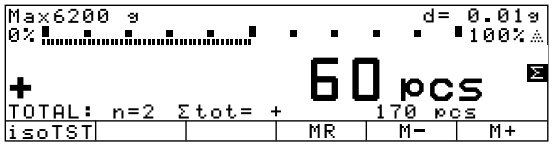

```
--------------------
16.01.1997      11:06
n       +           1
N       +    1764.45 g
Qnt     +         50 pcs
```

10. Unload the scale — Remove parts from the scale

11. Place another load of parts on the scale (e.g., 60 pcs) — Place parts on the scale



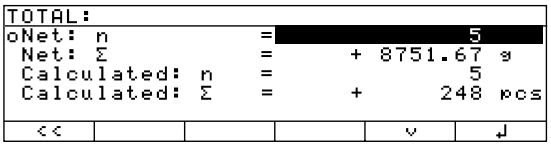
12. Add piece count to stored total — **M+** soft key




```
n                   2
N       +    2117.34 g
Qnt     +         60 pcs
```

13. Repeat steps 10 and 11 as required

14. Display final evaluation ("Info" window) (here: 5 weighing operations; total weight: 8751.67 g; total quantity: 248) The **O** indicates which value is displayed in the text line; you can change this selection — **MR** soft key



15. Print final evaluation — ⊙

```
--------------------
n                   5
Total +    8751.67 g
Total +         248 pcs
16.01.1997      11:16
--------------------
```

Formulation

Purpose

With this application program you can add weight values and calculated values as components of a formula to a totalizing memory.

You can use this application in combination with any program chosen from Application 1* (such as counting, weighing in percent) and one from Application 2 (check-weighing, time-controlled functions) as well as with the extra functions.

* = not with recalculation or 2nd tare memory

Available Features

- Totalization of weight values and calculated values
- Weigh in different components toward zero to a total amount defined by pressing the **Nom** soft key and entering the value through the numeric keys
- Simultaneous storage of net and calculated values, if available
- Optional configuration in the Setup menu for loading weight values and calculated values either from Application 1 (e.g., counting, weighing in percent) or from Application 2 (checkweighing, time-controlled functions)
- Totalizing memory for up to 65,535 values
- Transaction counter and current total displayed in the text line
- Scale tared after a value has been stored
- Manual input of the number of individual weighing operations and confirmation using the **nDef** soft key (target no. of operations nDef). Result printed and memory cleared after printout of nDef.
- Optional configuration in the Setup menu to add the current weight, with display accuracy, to the current total by pressing the **M+** soft key and generating a printout of the result
- Optional configuration in the Setup menu for stability-dependent storage of the measured value: Balance/scale functions, Stability range
- Optional automatic storage of measured values

  Storage of measured value is indicated by →←; ↓↓ indicates that you can place a load on the scale.
- Minimum load threshold for automatic storage
- Press the **M–** soft key to delete the last value added to the totalizing memory. The transaction counter value is reduced by one and a printout is generated.
- Printout of an evaluation of results, depending on the Application 1 or Application 2 parameters. Configure the Setup menu to define the information included on this printout.
- Press the key identified by **MR** (soft key) for a printout of an intermediate evaluation after each addition or a final evaluation
- A final evaluation is printed when the formulation routine is ended by pressing CF, if no final evaluation was generated by pressing **MR**
- Optional configuration in the Setup menu to clear the totalizing memory and reset the transaction counter by pressing CF or after an evaluation is printed out
- Totalization data and transaction counter data are stored in the non-volatile memory
- Continue formulation after turning the scale off and back on

Factory Settings of the Paramters

Automatic storage: **Off**

Minimum load for automatic storage: **10 digits**

Source of data for auto storage: **Application 1**

Evaluated values: **Net**

Evaluation mode, **MR** key function: **Intermediate evaluation, print**

Printout of individual components: **Yes**

Stability range: **2 digits**
Printout: Application-defined output:
Print on request then tare: **Off**

Soft Key Functions

M+	Add weight values or application values to the total in the totalizing memory. The component or transaction counter value increases by one each time you press this key.
M–	Delete the last value added to memory. The transaction counter value decreases by 1. You cannot delete previous values by repeatedly pressing this key.
MR	Print or display an intermediate or final evaluation
nDef	Store the input number of components
Nom	Press to enter target component weight using the numeric keys

Printout of Formulation Report

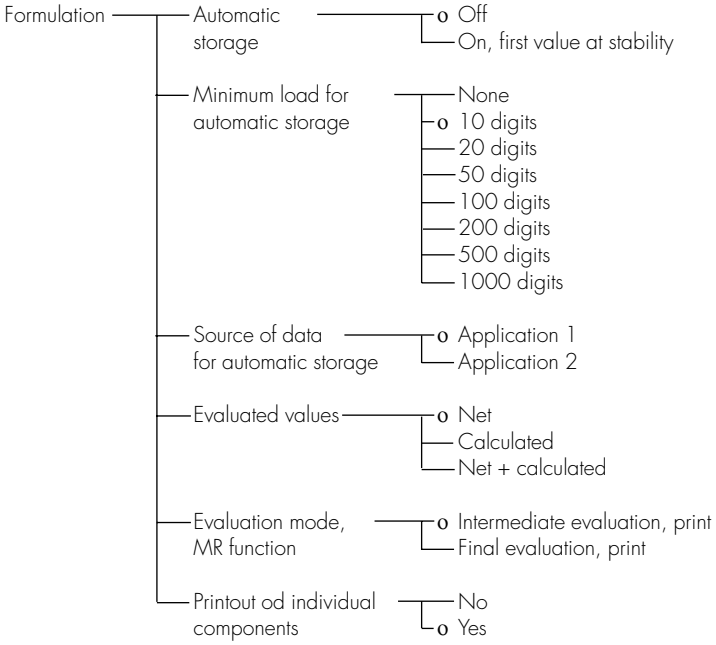
When an intermediate or final evaluation is printed out, all results up to this point are included.

```
Comp2 + 42.38 g
Tot.cp+184.89 g
```

Comp2:	Weight of the 2nd component
Tot.cp:	Total of all components

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed; a self-test is performed
- Select the "Formulation" application in the Setup menu: press SETUP
- Select **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Application 3 (data records)**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Formulation**: press the **^** or **v** soft key
- Confirm **Formulation**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Additional Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to Another Application

- Press ⎙
- > See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

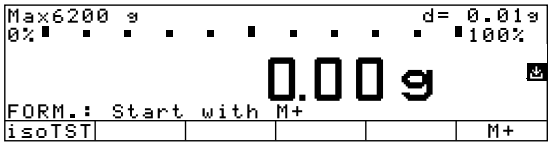
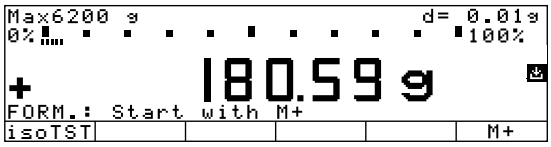
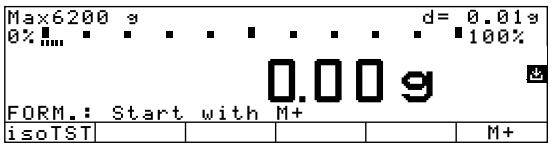
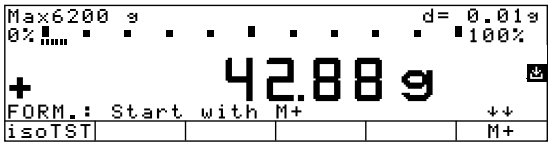
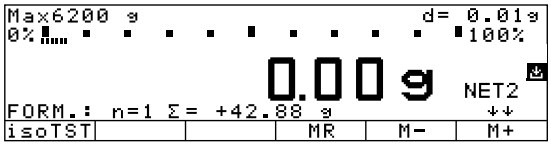
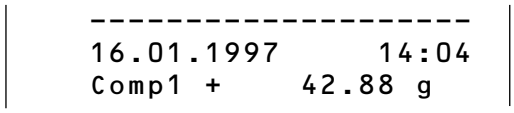
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

Weighing in Components

Settings (changes in the factory settings required for this example):

Setup: App: Application 3: Formulation: Automatic storage: On, first value at stability
Setup: App: Application 3: Formulation: Minimum load for automatic storage: 100 digits
Setup: App: Application 3: Formulation: Evaluation mode, MR function: Final evaluation, print

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete old formulation data	CF	
3. Tare the scale	TARE	
4. Place the empty container on the scale (here: 180.59 g)	Place load on the scale	
5. Tare the scale	TARE	
6. Weigh in the first component (here: 42.88 g)	Place components in container	
7. Store components in the formulation memory Scale is tared automatically	**M+** soft key	
Component are printed out automatically		

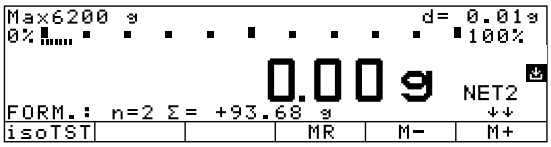
8. Weigh in next component (here: 50.80 g)

   Components are stored in the Totalization memory at stability and printed out

   Scale is tared automatically

Place components in container

```
Comp2 +     50.80 g
```



9. Repeat step 7 as required

10. Print final evaluation (here: with total weight of all components: 212.43 g)

MR soft key

```
--------------------
n                   2
Tot.cp+    212.43 g
16.01.1997      14:10
--------------------
```

11. Delete old formulation data, if necessary

CF

Statistics

Purpose

With this application program, you can have weight values and calculated values totalized and statistically evaluated.

The values determined for the evaluation are:

- average (mean value)
- standard deviation
- variation coefficient
- sum of all values
- lowest value (minimum)
- highest value (maximum)
- difference between the minimum and the maximum

You can use the statistics application in combination with any program chosen from Application 1 (such as counting, weighing in percent) and one from Application 2 (checkweighing, time-controlled functions) as well as with the extra functions.

Features

- Storage of weight values and calculated values
- Simultaneous storage of net and calculated values
- Optional configuration in the Setup menu for loading weight values and calculated values either from Application 1 (such as counting, weighing in percent) or from Application 2 (checkweighing, time-controlled functions)
- Totalizing memory for up to 65,535 values
- Simultaneous display in the text line of the transaction counter and, e.g., the current total
- Optional configuration in the Setup menu for having the scale tare automatically after a value has been stored in the totalizing memory
- Manual input of the number of individual weighing operations and confirmation using the **nDef** soft key (target no. of operations nDef). Result printed and memory cleared after printout of nDef.
- Optional configuration in the Setup menu to add the current weight, with display accuracy, to the current total by pressing the **M+** soft key and generate a printout of the result
- Optional configuration in the Setup menu for stability-dependent storage of the measured value: Balance/scale functions, Stability range
- Optional automatic storage of measured values

  Storage of measured value is indicated by →←;
  ↓↓ indicates that you can place a load on the scale.
- Minimum load threshold for automatic storage
- Press the **M–** soft key to delete the last value added to the totalizing memory. The transaction counter value is reduced by one and a printout is generated.
- Press the **MR**: soft key for information about number of transactions and the current total. By configuring the Setup menu, you can define whether the information is displayed and printed, or only printed, and whether the information comprises an intermediate or final evaluation
- In the Info window you can use the ˅, ↲ (o) soft keys to choose which value will be displayed in the text line during weighing
- Printout of the final result depending on the Application 1 or Application 2 parameters. Configure the Setup menu to define which values are included on the printout (printout of individual components)
- Press **MR** for a printout of an intermediate evaluation after each addition or a final evaluation
- A final evaluation is printed when the statistics routine is ended by pressing CF, if no final evaluation was generated by pressing **MR**
- Optional configuration in the Setup menu to clear the totalizing memory and reset the transaction counter by pressing CF or after an evaluation is printed out
- Totalization data and transaction counter data are stored in the non-volatile memory
- Continue totalization after turning the scale off and back on

Factory Settings

Automatic storage: **Off**

Minimum load for automatic storage: **10 digits**

Source of data for auto storage: **Application 1**

Evaluated values: **Net**

Evaluation mode, MR key function: **Intermediate evaluation, print**

M+/M– function, then tare: **Off**

Printout of individual components: **Yes**

Stability range: **2 digits**
Printout: Application-defined output:
Print on request then tare: **Off**

Soft Key Functions

M+ Add weight values or application values to the total in the totalizing memory. The component or transaction counter value increases by one each time you press this key.

M– Delete the last value added to memory. The transaction counter value decreases by 1. You cannot delete previous values by repeatedly pressing this key.

MR Print or display an intermediate or final evaluation

nDef Store the input number of components

Printout of Statistics

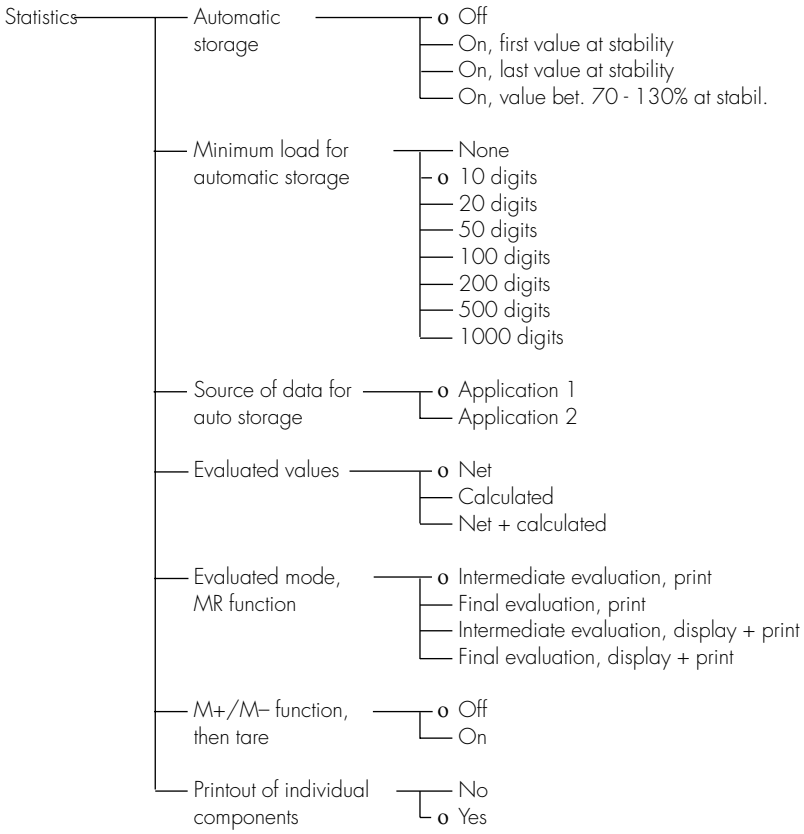
The transaction or component counter is printed in front of each measured value (weight). When an intermediate or final evaluation is printed out, all results up to this point are included.

```
n                5
Total   + 151.67 g
Avg.    +   33.0 pcs
s       +    3.2 pcs
srel    +   9.70 %
Total   +    165 pcs
Min     +     29 pcs
Max     +     37 pcs
Diff    +      8 pcs
```

n: Transaction counter
Total: Sum of all values
Mean: Average
s: Standard deviation
srel: Variation coefficient
Total: Sum of all values
Min: Minimum
Max: Maximum
Diff: Difference between minimum and maximum

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed
- Select the "Statistics" application in the Setup menu: press SETUP
- Select **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Application 3 (data records)**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Statistics**: press the **^** or the **v** soft key
- Select **Statistics**: press the **>** soft key



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Additinal Functions

In addition to the functions for:

– alphanumeric input,

– taring (not during alphanumeric input),

– printing,

you can also access the following functions from this application:

Calibration/Adjustment

- Press the **isoTST** soft key
- > See "Calibration/Adjustment" for further instructions

Toggling to Another Application

- Press ⏻D
- > See the section on the corresponding application program for further instructions

Setup (Setting Parameters)

- Press SETUP
- > See "Configuring the Scale" for further instructions

Turning Off the Scale

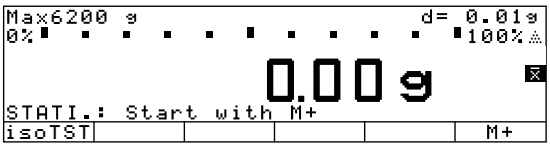
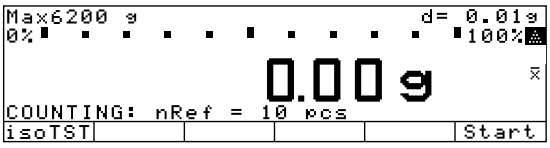
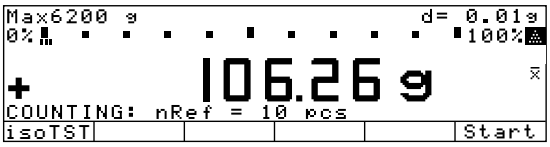
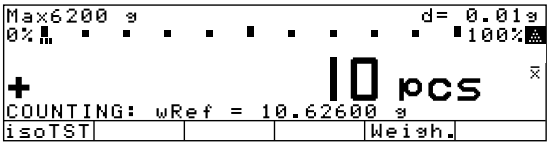
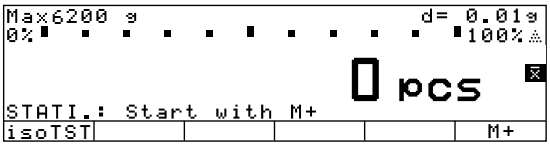
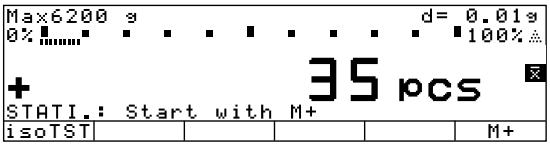
- Press I/⏻
- > The scale shuts off
- > The display goes blank, then OFF or Standby is displayed with backlighting

Practical Example

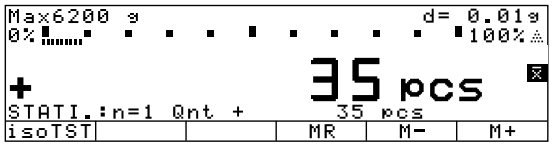
Totalize counted pieces and print out statistics

Settings (changes in the factory settings required for this example):

Setup: App: Application 1: Counting: Average piece weight updating: Manual
Setup: App: Application 3: Statistics: Evaluated values:Calculated
Setup: App: Application 3: Statistics: Evaluation mode, MR function: Final evaluation, display + print

Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and configure the settings as indicated above	I/⏻	
2. Delete old statistics data, if necessary	CF	
3. Tare the scale	TARE	
4. Toggle to Application 1: Counting	⟲	
5. Place the displayed number of parts on the scale (here: 10 pcs)	Place parts to be counted on the scale	
6. Initialize the Counting application	**Start** soft key	
		nRef 10 pcs wRef 10.62600 g
7. Remove the reference sample quantity and toggle to Statistics	Unload the scale ⟲	
8. Place a number of parts on the scale (here: 35 pcs)	Place parts on the scale	

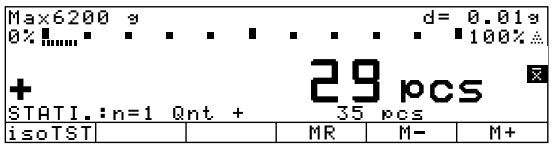
9. Store piece count — **M+** soft key



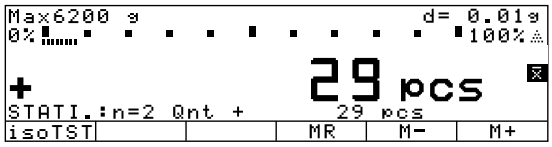

```
--------------------
16.01.1997      11:06
n       +           1
Qnt     +       35 pcs
```

10. Unload the scale — Remove parts from the scale

11. Place another load of parts on the scale (e.g., 29 pcs) — Place parts on the scale



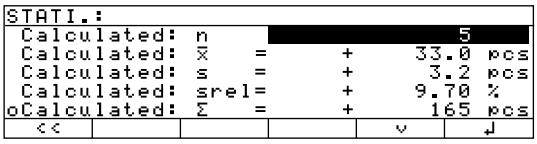
12. Add piece count to stored total — **M+** soft key




```
n       +           2
Qnt     +       29 pcs
```

13. Repeat steps 11 and 12 as required

14. Display final evaluation ("Info" window) (here: 5 weighing operations; total quantity: 165) The ▫ indicates which value is displayed in the text line; you can change this selection — **MR** soft key



15. Print final evaluation —

```
--------------------
n                   5
Avg.    +      33.0 pcs
s       +       3.2 pcs
srel    +      9.70 %
Total   +       165 pcs
Min     +        29 pcs
Max     +        37 pcs
Diff    +         8 pcs
16.01.1997      11:16
--------------------
```

Extra Functions

Second Tare Memory (Preset Tare)

Purpose

With this function, you can store the weight currently on the scale as a tare weight, or use the numeric keys to enter a number for a preset tare weight.

You can use this function in combination with a program from Application 1 (such as counting, weighing in percent), one from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics) as well as with the extra functions.

Features

- Store a weight on the scale in the second tare memory (without numeric input)
- Store a numeric value in the second tare memory (input using the numeric keys)
- Identify a net value as **NET** when there is a value stored in the second tare memory
- You can assign this function to the fourth or fifth soft key (from the right); i.e., F4 or F5
  The soft key designation for this function is: `PT1/T1`
- Optional configuration in the Setup menu for storing the current weight readout as the container tare weight. Any load subsequently placed on the scale that is more than 70% of the tare weight is automatically recognized as a container and the scale is tared automatically.
- Automatic printout when a value is stored or input (see "Configuring the Scale")
- Press [CF] to delete the (preset) tare value

Factory Settings

Container tare weight: `No`

Automatic printout: `Off`

Soft Key Functions

`PT1/T1`	Store weight as tare value
`PT1`	Store input value

Printout of the Data in the 2nd Tare Memory

The printout shows either
- Net value `N1`,
- Tare weight `T1`, or
- Manually entered tare value `PT1`

```
N1      63.48 g
T1     138.73 g
PT1    150.00 g
```

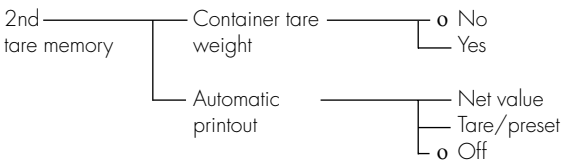
N1: Net weight (value) when a weight is stored in the tare memory
T1: Tare weight
PT1: Preset tare value entered using the numeric keys

Preparation

- Turn on the scale: press [I/⏻]

> The Sartorius logo is displayed; a self-test is performed

- Select Extra function (F4) or Extra function (F5) in the Setup menu: press [SETUP]
- Select `Application parameters`: press the `v` soft key 2 x, then the `>` soft key once
- Select `Extra function (F4)` or `Extra function (F5)`: press the `v` soft key 3 x (or 4 x), then press the `>` soft key once
- Select `2nd tare memory`
- Confirm `2nd tare memory`



o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the `<<` soft key

Second Tare Memory in Legal Metrology

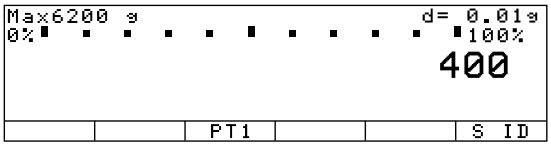
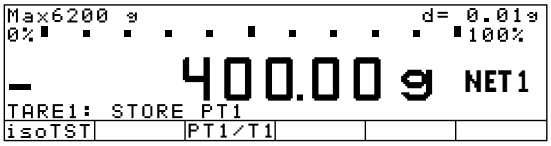
- Press the `(i)PT1` soft key to enter information about the tare value using the number keys.
- The PT1 tare value is printed out with the net value.

Practical Example

Determine the Contents of Bottles: Bottle weight = 400 g.

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Extra function (F4): 2nd tare memory: Automatic printout: Tare/preset tare

Step	Press key(s) (or follow instructions)	Display/Output
1. If necessary: turn on the scale and enter the settings given above	I/⏻	
2. Enter bottle weight (example 400 g)	4 0 0	
3. Store tare value	**PT1** soft key	 PT1 + 400.00 g
4. Determine net weight of bottles (in this case: net contents = 650 g)	Place filled bottles on the scale	

Individual Identification Codes (ID)

Purpose

With this function, you can assign IDs to values for documentation and printouts.

You can use this function in combination with any program from Application 1 (such as counting, weighing in percent), one from Application 2 (checkweighing, time-controlled functions) and one from Application 3 (totalizing, formulation, statistics) as well as with the other extra functions.

Features

- Store up to 4 IDs; these can be stored, changed or deleted individually.
- Each ID consists of a name and a value; both can be defined by the user.
- ID designations are configured as follows: Setup: Printout: Identification codes
- Each ID code can have up to 20 characters; when you enter the value later, however, no more than 15 characters of this ID are displayed.
- The ID values are entered while the application program is active; press the **ID** soft key to toggle to the ID input mode.
- Each ID value can have up to 20 characters.
- Access 1 of the 4 IDs directly using the numeric keys. The other three can only be accessed by pressing the **ID** soft key to toggle to the ID input mode.
- You can assign this function to the fourth or fifth soft key (from the right); i.e., F4 or F5.
- You can configure when the ID will be included on the printout (see "Preparation" on the next page).
- You can configure the position of IDs on the individual or total printout.
- The ID code is printed flush left; the value flush right. If the name and value together are too long for one line, the data is printed on two lines.
- Optional configuration in the Setup menu to delete a single character when entering an identification code by pressing CF. Setup: Device parameters: Keys: CF function for input: Delete last character
- Press the **Delete** soft key to delete an ID

Factory Settings of the ID Names

ID1: **ID1**
ID2: **ID2**
ID3: **ID3**
ID4: **ID4**

Factory Settings for ID Codes

No values set

Factory Settings

Printout:
Each time the print key is pressed

Soft Key Functions

ID	Toggle to "Identification codes" menu
Delete	Delete input of selected ID

Printout of ID Codes

Up to 4 (stored) identification codes are printed out.

```
ID1      Lot no. 1234
ID2 Daimler/Chrysler
ID3       Screws M4x6
ID4         Jack Smith
```

ID1: Identification 1 (ID 1)
ID2: Identification 2 (ID 2)
ID3: Identification 3 (ID 3)
ID4: Identification 4 (ID 4)

Preparation

- Turn on the scale: press I/⏻
- > The Sartorius logo is displayed
- Select Extra function (F4) or Extra function (F5) in the Setup menu: press SETUP
- Select **Application parameters**: press the **v** soft key 2 x, then the **>** soft key once
- Select **Extra function(F4)** or **Extra function(F5)**: ress the **v** soft key 3 x (or 4 x), then the **>** soft key once
- Select **Identification codes**
- Confirm **Identification codes**

Identification — Printout
- Automatic, if configured
- Once after pressing print, if configured
- o Each time the print key is pressed
- Once for M+ function (app. 3 memory)

o = factory setting

see also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings for the printout: press the **<** soft key 4 x
- Enter ID name: Select "Printout": press the **v** soft key, then the **>** soft key
- Select "Identification #": press the **v** soft key 5 x, then the **>** soft key once
- Select **ID1**
- Enter name for **ID1** and confirm: use the numeric keys for numbers and/or the soft keys to enter letters
- ○ Enter names for **ID2**, **ID3** and **ID4**, if desired
- Save settings and exit the Setup menu: press the **<<** soft key

Example

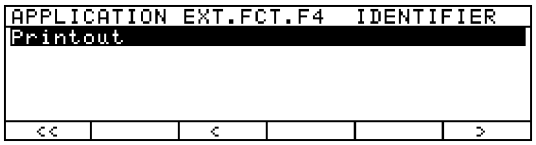
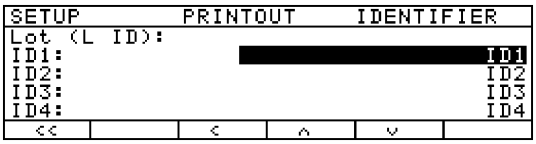
See next page

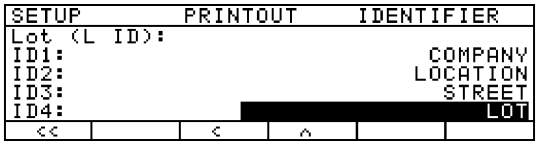
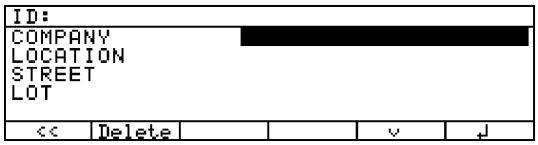
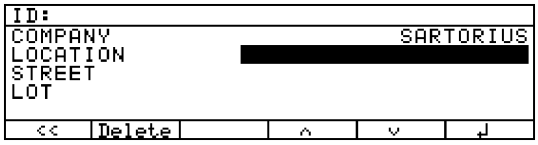
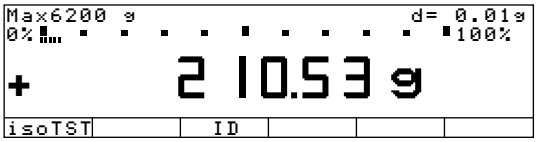
Practical Example

Include company address and sample lot number on the printout. Each ID line begins with the name. Print this ID for each net value.

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Extra function (F4): Identification codes
Setup: Input: ID1: Company
Setup: Input: ID2: Location
Setup: Input: ID3: Street
Setup: Input: ID4: Lot

Step	Press key(s) (or follow instructions)	Display/Output
1. If necessary, turn on the scale	I/⏻	
2. Select "Extra Function (F4)" in the Setup menu	SETUP ˅ soft key2 x, then ˃ soft key once ˅ soft key 3 x, then ˃ soft key once	
3. Select "Identification codes"	˅ or ˄ soft key; repeatedly, if necessary	
4. Confirm "Identification codes" and exit this menu item	˃ soft key; then ˂ soft key 3 times	
5. Select ID1 (Printout: Identifier)	˅ or ˃ soft key ˅ soft key 5 x, then ˃ soft key, then ˅ soft key	
6. Enter name for ID 1 (in this case: COMPANY) and confirm	ABC … see also page 37 ABC, ↵ soft key	

Step	Press key(s) (or follow instructions)	Display/Output
7. Repeat steps 6 and 7 for: ID2: LOCATION ID3: STREET ID4: LOT		
8. Save settings, exit the Setup menu and select input mode for IDs	**<<** soft key **ID** soft key	
9. Enter name of company (such as Sartorius)	ABC … see also page 37	
10. Confirm input	↵ soft key	
11. Repeat steps 10 and 11 for LOCATION: GOETTINGEN STREET: WEENDER LANDSTRASSE LOT: 15		
12. Place the first sample on the scale (ex.: weight of 110.53214 g)	Place load on scale	
13. Print weight (if desired, perform further weighing operations and print results)	⊙	
14. When the weighing is completed delete each ID individually	**ID** soft key **Delete** soft key 4 times	

Saving Values Manually in M+

Purpose

This extra function "Manual storage in app.3 memory" enables you to load weight values and calculated results directly from Application 1 (such as counting, weighing in percent) or Application 2 (checkweighing, time-controlled functions) into Application 3 (totalizing, formulation, statistics).

Features

– You can assign this function to the fourth or fifth soft key (from the right); i.e, F4 or F5; the soft key label for this function is **M+**

– An Application 3 program (totalizing, formulation, statistics) must be running so you can display and print the result

Factory Settings

No user-definable parameters

Preparation

● Turn on the scale: press I/⏻

> The Sartorius logo is displayed

● Select "Extra function (F4)" or "Extra function (F5)" in the Setup menu: press SETUP

● Select **Application parameters**: press the **v** soft key 2 x, then the **>** soft key

● Select **Extra function (F4)** or **Extra function (F5)**: press the **v** soft key 3 x (or 4 x), then the **>** soft key once

● Select **Man. store in app.3 memory (M+)**

● Confirm **Man. store in app.3 memory (M+)**

See also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"

● Save settings and exit the Setup menu: press the **<<** soft key

Product Data Memory

Purpose

With this function, you can enter, store and load data records for initialization of applications, including user-defined data.

You can use this function in combination with a program from Application 1 (such as counting, weighing in percent), one from Application 2 (checkweighing, time-controlled functions) and an extra function from Application 3 (identification codes, 2nd tare memory).

Features

- Store up to 300 data records
- Data records can be created, stored or deleted individually
- Press the **ProDat** soft key to display data records
- Define a name for each data record of up to 15 alphanumeric characters; the desired location is displayed in the product data memory
- Optional configuration in the Setup menu to delete a single character when entering a data record name by pressing CF. Device settings: Keys: CF function for input: Delete last character.
- Data records are displayed in alphabetical order.
- Initialization data set for an application (such as wRef, nRef) is saved when you select the Store option; this data is loaded from the product data memory when you access this memory from the corresponding application
- Use the numeric keypad to search for and display individual data records
- You can assign this function to the fourth or fifth soft key (from the right), i.e. F4 or F5
- Error messages are displayed in the text line in plain English – or your choice of a different language.
- Press the **Delete** soft key to delete a data record

Data Battery-Backed Data Memory:

When the scale is disconnected from AC power, this scale-generated data will remain stored for approx. three months. In the standby mode, data are retained by the power supply.

Factory Settings

No user-definable parameters.

Soft Key Functions

ProDat	Toggle to data record display
Delete	Delete selected data record
Load	Overwrite the initialization data with the selected data record
Change	Change the data in the stored data record
New	Create a new data record (after entering a data record name).
Store	Store the initialization data of the current application under the selected data record name. If data already exist for this data record, a prompt asks whether this data should be overwritten.
No	Answer "No" to cancel the initiated delete or overwrite operation
Yes	Answer "Yes" to perform the delete or overwrite operation

Preparation

- Turn on the scale: press I/⏻
> The Sartorius logo is displayed
- Select Extra function (F4) or Extra function (F5) in the Setup menu: press SETUP
- Select **Application parameters**: press the **v** soft key 2 x, hen the **>** soft key once
- Select **Extra function(F4)** or **Extra function(F5)**: press the **v** soft key 3 x (or 4 x), then the **>** soft key
- Select **Product data memory**
- Confirm **Product data memory**

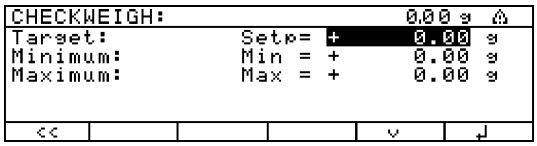
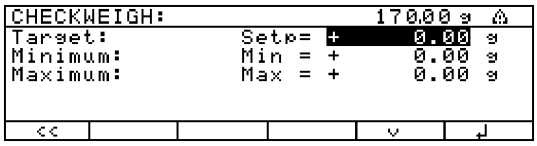
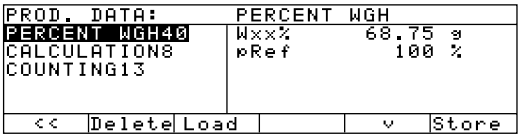
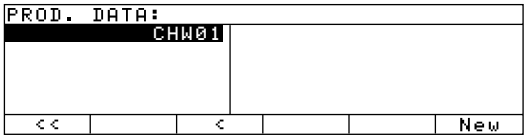
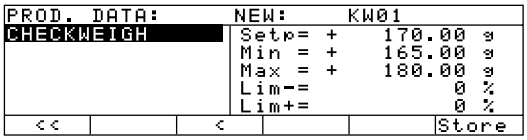
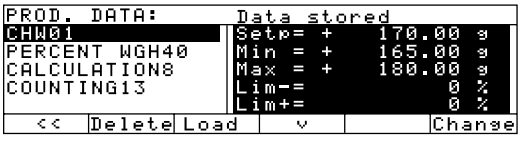
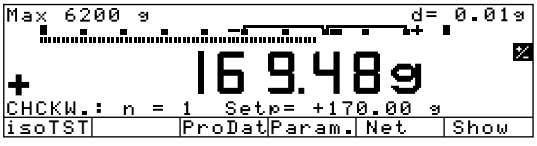
  See also the "Application Parameters (Overview)" in the chapter entitled "Configuring the Scale"
- Save settings and exit the Setup menu: press the **<<** soft key

Practical Example

Create a new product base data record for initializing the checkweighing program, including: target value, minimum, maximum

Settings (changes in the factory settings required for this example):

Setup: Application parameters: Extra function (F4): Product data memory
Setup: Application parameters: Application 2: Checkweighing

Step	Press key(s) (or follow instructions)	Display/Output
1. If necessary, turn on the scale; then enter the settings given above	I/⏻	
2. In the Checkweighing application, toggle to the input mode for target, minimum and maximum values	**Param.** soft key	
3. Enter target: 170 g; minimum: 165 g; maximum: 180 g	see the Example for Checkweighing, steps 5 through 9	
4. Toggle to display of product data (existing data records are displayed; in this example, 3 data records have been stored)	**ProDat** soft key	
5. Enter a name for the new data record (here: CHW01)	ABC **ABCDEF** soft key, **C** soft key **GHIJKL** soft key, **H** soft key **STUVWX** soft key, **W** soft key 0 1	
6. Store current Checkweigh parameters as a data record	**New** soft key	
7. Confirm store function	**Store** soft key	
8. Exit product data display	**<<** soft key	

Combining Applications

The following table summarizes the possibilities for combination of the application programs described here.
Each line stands for one combination. The weighing function is generally available, and does not have to be combined with a calculating function.

Application 1 (basic settings)	Application 2 (checking and control functions)	Application 3 (data records and documenting functions)
Counting	–	Totalizing
Counting	–	Formulation
Counting	–	Statistics
Weighing in percent	–	Totalizing
Weighing in percent	–	Formulation
Weighing in percent	–	Statistics
Animal weighing	–	Totalizing
Animal weighing	–	Statistics
Recalculation	–	Totalizing
Recalculation	–	Statistics
Calculation	–	Totalizing
Calculation	–	Formulation
Calculation	–	Statistics
Differential weighing	–	–
–	Checkweighing	Totalizing
–	Checkweighing	Formulation
–	Checkweighing	Statistics
Counting	Checkweighing	Totalizing
Counting	Checkweighing	Formulation
Counting	Checkweighing	Statistics
Weighing in percent	Checkweighing	Totalizing
Weighing in percent	Checkweighing	Formulation
Weighing in percent	Checkweighing	Statistics
Recalculation	Checkweighing	Totalizing
Recalculation	Checkweighing	Statistics
Calculation	Checkweighing	Totalizing
Calculation	Checkweighing	Formulation
Calculation	Checkweighing	Statistics

Application 1 (basic settings)	Application 2 (checking and control functions)	Application 3 (data records and documenting functions)
–	Time-controlled functions	Totalizing
–	Time-controlled functions	Formulation
–	Time-controlled functions	Statistics
Counting	Time-controlled functions	Totalizing
Counting	Time-controlled functions	Formulation
Counting	Time-controlled functions	Statistics
Weighing in percent	Time-controlled functions	Totalizing
Weighing in percent	Time-controlled functions	Formulation
Weighing in percent	Time-controlled functions	Statistics
Animal weighing	Time-controlled functions	Totalizing
Animal weighing	Time-controlled functions	Statistics
Recalculation	Time-controlled functions	Totalizing
Recalculation	Time-controlled functions	Statistics
Calculation	Time-controlled functions	Totalizing
Calculation	Time-controlled functions	Formulation
Calculation	Time-controlled functions	Statistics

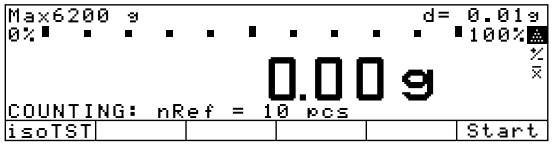
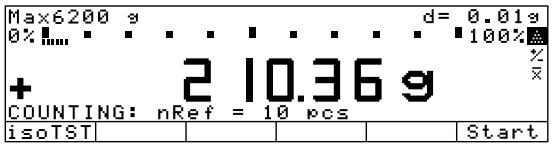
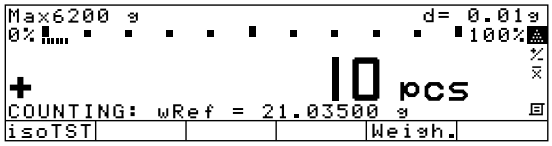
Practical Combination of Several Applications

Example: Checkweighing with statistical evaluation

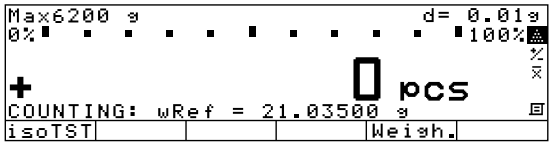
You want to check a piece count, and have the results that lie within the tolerance range statistically evaluated and Printed as an ISO/GMP-compliant record.

Settings (changes in the factory settings required for this example):

Setup: App: Application 1: Counting
Setup: App: Application 2: Checkweighing
Setup: App: Application 3: Statistics: Automatic storage: On, first value at stability
Setup: App: Application 3: Statistics: Source of data for auto storage: Application 2
Setup: App: Application 3: Statistics: Evaluated value: Calculated
Setup: App: Application 3: Statistics: Evaluation mode, MR function: Intermediate evaluation, display+print
Setup: App: Printout: ISO/GLP/GMP printout: Always

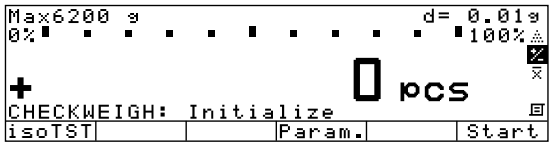
Step	Press key(s) (or follow instructions)	Display/Output
1. Turn on the scale and enter the settings given above	I/⏻	
2. Place reference sample quantity	Place parts on the scale	
3. Initialize the scale	**Start** soft key	

```
--------------------
18.03.1997       09:41
     SARTORIUS
Mod.            FC6CCE-H
Ser. no.        60419914
Ver. no.        01-42-02
ID
--------------------
L ID
nRef              10 pcs
wRef      21.03500 g
nDef               0
n                  1
Qnt   +           10 pcs
```

4. Remove reference sample quantity	Unload the scale	

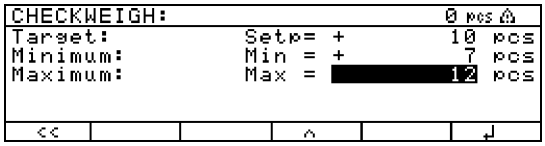
5. Initialize Checkweighing
   Toggle to Checkweighing

   [D]



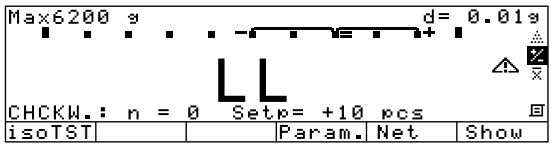
6. Enter target, minimum and maximum values (here: target: 10 pcs; minimum: 7 pcs; maximum: 12 pcs)

   Param. soft key
   [1] [0] ↵ soft key
   [7] ↵ soft key
   [1] [2]



7. Store input

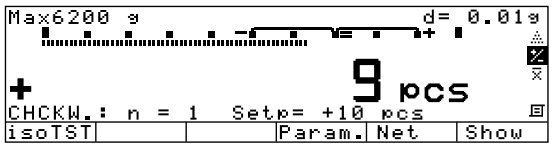
   ↵ soft key



Setp	+	10 pcs
Min	+	7 pcs
Max	+	12 pcs

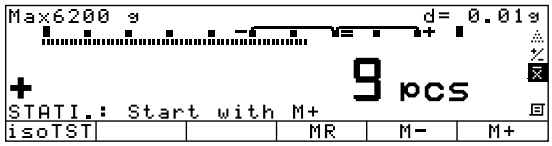
8. Determine first unknown quantity

   Place uncounted parts on the scale



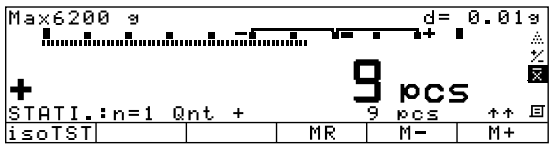
9. Toggle to Statistics

   [D]



10. Initialize automatic storage

    M+ soft key



n		1
Qnt	+	9 pcs

11. Determine further unknown quantities

    Printout is generated automatically

    Place parts to be counted on the scale

...		
n		4
Qnt	+	9 pcs
---	---	---
n		4
Avg.	+	10.0 pcs
s	+	0.8 pcs
srel	+	8.00 %
Total	+	40 pcs
Min	+	9 pcs
Max	+	11 pcs
Diff	+	2 pcs
---	---	---
18.03.1997		10:26
Name:		
---	---	---

12. End weighing series
    Statistics are evaluated
    Final GLP printout is generated

    [CF]

13. Delete initialization of the last application

    [CF]

Data Output Functions

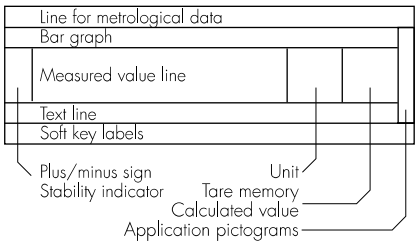
There are 3 options for data output:

– Output to the display and control unit

– Output to a printer (generate a printout)

– Output to a peripheral device (e.g., computer) via the interface port

Output to the Display and Control Unit



The display is divided into 9 sections. Information about the scale, the application being used and the sample weighed is output in the following sections:

– Line for metrological data

– Bar graph

– Plus/minus sign, stability symbol display

– Line for measured values (weights)

– Weight unit display

– Data in tare memory; calculated value

– Application symbol display

– Text line

– Soft key labels

Line for Metrological Data (on scales verified for legal metrology)

This line shows:

Max6200 g – Maximum weighing capacity (such as 6200 g)

Min 5 g – Minimum weighing capacity; the weight must not go below this limit (such as 5 g)

e= 0.1g – Verification scale interval; irrelevant if the scale is not used in legal metrology (such as 0.1 g)

d= 0.01g – Readability/actual scale interval: indicates the scale's display increment in digits (such as 0.01 g)

Bar Graph (overview display)

In the bar graph, weighing results are displayed either

0% 100% – as a percentage of the maximum scale capacity, or

0% 100% – in relation to a target value, with tolerance limits indicated.

You can turn off (blank) the bar graph display (Setup: Device parameters: Display: Digit size: 13 mm + text display or 13 mm)

Plus/Minus Sign, Stability Symbol

This section shows:

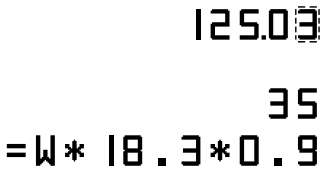
– "Busy" symbol

+ – – Plus or minus sign

0 – Zero symbol (indicating the scale has been zeroed)

Line for Measured Values

This line shows:



- The current weight value
- Calculated values (such as piece counts)
- User input (such as a lot number or equation)

Weight Unit Display

This section shows:

g
pcs

- The current weight unit (such as g)
- Designation of other values (such as »pcs« for piece count)

Tare Memory, Calculated Value

This section shows:

NET1 NET2

- Indication that a value is calculated (not valid in legal metrology)
- Indication that the tare memory contains application data

Application Symbols

This column shows:

- Symbol for Application 1 (toggling between weight units, counting, weighing in percent, animal weighing, calculation, etc.)
- Symbol for Application 2 (checkweighing, time-controlled functions)
- Symbol for Application 3 (totalizing, formulation, statistics)
- Symbol for current print job
- Symbol for ISO/GLP printout

Text Line

This line contains:

COUNTING: nRef = 10 pcs
Ref. wt. too light

- Explanatory text about the application program (for example, about "Counting")
- Explanation of error codes

Soft Key Labels

This line shows:

isoTST PT1/T1 S ID M+

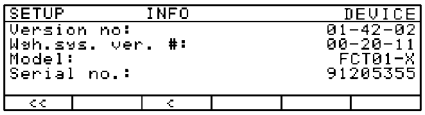
- Texts (abbreviations) to indicate the function assigned to each key

<< < ^ v > ↵

- Symbol for selecting and confirming parameter settings (see also "Operating Design")

Scale Information

In the Setup menu, you can select **Setup: Info: Device information**: for a display of scale information. The display includes:



- Software version number
- Scale version number
- Scale model
- Scale serial number

Interface Port

Purpose

The scale has an interface port to which you can connect a computer, a remote display or an external check-weighing display via Zener barrier.

You can use a PC to change, start and/or monitor the functions of the scale and the application programs. The interface port also provides data output lines for the over/ under checkweighing program. This port can also be used to connect a hand or foot switch.

⚠ Warning: When Using Prewired RS-232 Connecting Cables!

The pin assignments in RS-232 cables purchased from other manufacturers are often incompatible with Sartorius scales. Check the pin assignments against the chart before connecting the cable, and disconnect any lines marked "Internally Connected" (e.g., pin 6). Failure to do so may damage or even completely ruin your scale and/or peripheral device.

Features

Type of interface port:	Serial port
Operating mode:	Full-duplex
Standard:	RS-232 (RS-485 optional)
Interface connector:	Round female connector, 14-contact Round female connector on the Zener barrier, 12-contact (in the safe area)
Transmission rates:	150, 300, 600, 1200, 2400, 4800, 9600 and 19,200 baud
Parity:	Odd, even, none
Character transmission:	Start bit, 8-bit ASCII, Parity, 1 or 2 stop bits
Handshake:	For 2-wire interface: software (XON/XOFF); for 4-wire interface: hardware (CTS/DTR)
Communication mode:	SBI, XBPI*, Printer: – YDP02 – YDP03 – YDP01IS – YDP01IS-Label – YDP02IS – YDP02IS-Label
Network address**:	Any number from 1 to 32 (inclusive)
Manual print mode	Without stability, after stability
Automatic print mode	Without stability, at stability, when weight changes
Data output format of the scale:	16 characters, 22 characters

⚠ You may need to use an external power supply to operate peripheral devices.
– The interface port can operate in the following modes:
–SBI
–XBPI (BPI)
–XBPI-RS485

* XBPI mode requires 9600 baud, 8-bit ASCII, odd parity, 1 stop bit
** For XBPI communication mode only

Factory Settings:

Transmission rates:	1200 baud
Parity:	Odd
Stop bits:	1 stop bit
Handshake:	Hardware, 1 character after CTS
Communication mode:	SBI
Network address:	0
Manual printing: Automatic printing:	After stability Without stability
Stop automatic printing:	Not possible
Automatic printout, time-dependent:	After 1 display update
Print on request then tare:	Off
Application initialization values:	Off
Line format:	For other apps./GLP (22 characters)

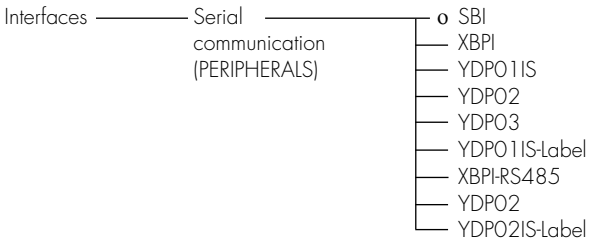
Preparation

- For the pin assignment charts, see the description starting on page 130.

Preparation

Configuring the Interface

- Turn on the scale press: I/⏻
> The Sartorius logo is displayed
- Call interface options: press SETUP
- Select **Device parameters**: press the **v** soft key, then the **>** soft key
- Select **Interfaces:** press the **v** soft key 5 times, then the **>** soft key once



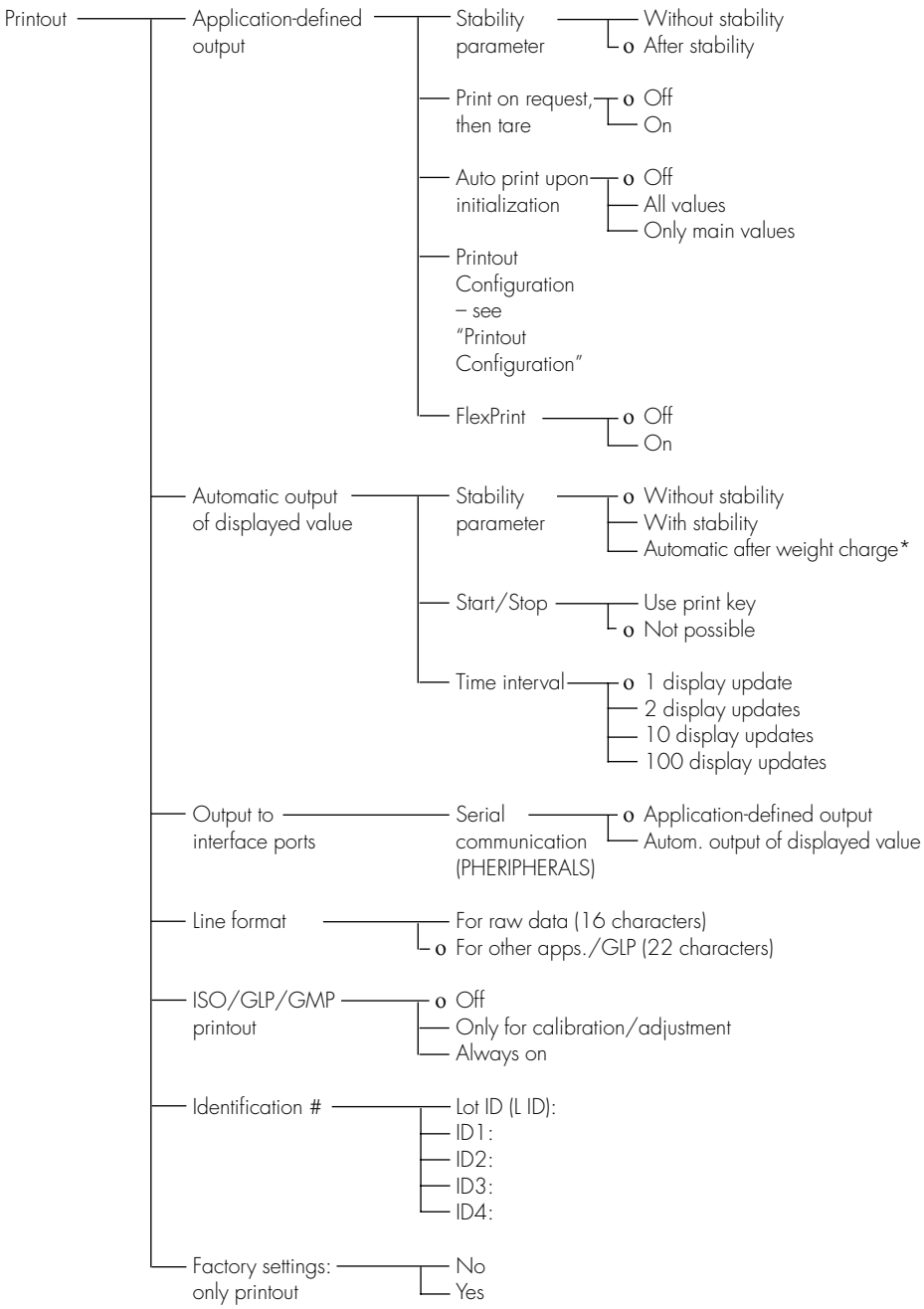
o = factory setting

see also "Application Menu (Overview)" in the chapter entitled "Configuring the Scale"

- Save settings and exit the Setup menu: press the **<<** soft key

Configuring a Printout

- Turn on the scale: press SETUP
- Select **Printout**: press the ∨ soft key 3 times, then the > soft key once



o = factory setting
* = auto print when load change is > 10 d and stability is reached; no printout until residual difference in load value is < 5 d

Configuring Printout Formats

For a number of application programs, you need to set initialization values. All values upon initialization or only the main values can be automatically printed as soon as you have configured this in the Setup menu: **Auto print upon initialization**

Weights and calculated values can be printed as numeric values either with a preceding data ID code (numeric value with 22 characters) or without one (numeric value only 16 characters). See also the section on **Line format** under the "Data Output".

You can define whether an ISO/GLP/GMP-compliant format is used for every printout, only for calibration/adjustment records, or not at all. See also page 125.

Printout ISO/GLP/GMP-compliant Records

In the Setup menu, you have a choice of three settings:

– No ISO/GLP record printed (**Off**)
– ISO/GLP/GMP record printed only for calibration/adjustment (**Only for calibration/ adjustment**)
– Every printout is an ISO/GLP/ GMP-compliant report (**Always on**)

Auto print checkweighing results: automatic printout of a weight when it is within the preset limits at stability

Auto print with time-controlled functions: automatic printout of weights after a preset time has elapsed or at a defined time

Printout of intermediate or final evaluation from the application 3 memory (totalizing, formulation and statistics); generate by pressing the **MR** soft key

Generating Printouts Acceptable for Legal Metrology:
You can configure the Setup menu of the scale to generate data records that are acceptable for legal metrology on a Sartorius printer:

– YDP02:
– YDP03:
– YDP01IS:
– YDP01IS-Label:
– YDP02IS:
– YDP02IS-Label:

[⊙] (Print) Key

Pressing this key causes the current value shown on the display to be printed out (weight with unit, calculated value, alphanumeric readout)
Setting:
Printout: Application-defined output: Automatic output of displayed value

Examples

`+ 153.00 g`	Weight in grams
`+ 58.56 ozt`	Weight in Troy ounces
`+ 253 pcs`	Piece count
`+ 88.23 %`	Percentage
`+ 105.78 o`	Calculated value

Line Format

The current value displayed can be printed with a data ID code of up to 6 characters at the beginning of the line. You can use this data ID code, to designate a weight readout as a net weight (N) or a calculated value as a piece count (QNT)
Setting:
Setup: Printout: Line format: For other apps./GLP (22 characters)

`ID ABC123DEF456GH`	Identification number*
`L ID ABC123DEF456GH`	Lot number (weighing series)*
`W ID ABC123DEF456GH`	Weight set number*
`N + 153.00 g`	Net value
`Qnt + 253 pcs`	Quantity
`Prc + 88.23 %`	Percentage

* = only for ISO/GLP-compliant records/printouts

Sample ID

You can have each weighed or calculated value that you print preceded by a line of text containing numbers and/or letters. You can either print this ID immediately as alphanumeric input (press [⊙]) or store it as the sample ID (`S ID` soft key) to be included on the next printout, if the "For other apps./GLP (22 characters)" setting is configured.

`S ID ABC123DEF456GH`	Sample ID (with less than 14 characters)
`ABC123DEF456GHI789JK`	Sample ID (with up to 20 characters)
`NUM 12345678`	Numeric key output when [⊙] pressed

Print Application Parameters

You can generate a printout of one or more of the values configured for initialization of an application as soon as you initialize the scale. This can include such values as nRef, wRef, pRef, etc.
Setting:
Setup: Printout: Application-defined output: Auto print upon initialization

`nRef 10 pcs`	Counting: Reference sample quantity
`wRef 1.23456 g`	Counting: Average piece weight
`pRef 80 %`	Weighing in percent: Reference percentage
`Wxx% 120.00000 g`	Weighing in percent: Reference weight
`mDef 10`	Animal weighing: Number of subweighing operations for averaging
`Mul 0.00347`	Animal weighing: Multiplication factor
`EQUAT.=W*18.3*0.9`	Calculation: Equation for calculation
`Setp + 100.00 g`	Checkweighing: Target weight
`Min + 98.10 g`	Checkweighing: Lower limit
`Max + 102.00 g`	Checkweighing: Upper limit

Auto Print

You can have the weight readout printed automatically[1]. This printout can be generated after a certain number of display updates[2]; you can also configure whether or not the auto-print function is dependent on the stability parameter[3]. The display update frequency depends on both the model of the scale and the current operating status.

N	+ 153.00 g	Net weight
S ID	12345678901234	Sample ID
Stat		Display blank
Stat	L	Display underload
Stat	H	Display overload

Setting:
[1]Setup: Printout: Automatic output of displayed value
[2]Setup: Printout: Automatic output of displayed value: Time-dependent auto print
[3]Setup: Printout: Automatic output of displayed value: Stability parameter

ISO/GLP Printout

You can have the parameters pertaining to weighing conditions printed before (GLP header) and after (GLP footer) the values from the weighing series (Setup: Printout: ISO/GLP/GMP printout: Always on). These parameters include:

GLP header:
- Date
- Time at the beginning of a weighing series
- Scale manufacturer
- Scale model
- Model serial number
- Software version
- ID number

GLP footer:
- Date
- Time at the end of the weighing series
- Field for operator signature

Operating the Scale with an ISO/GLP-compliant Logging Device (Printer)

ISO/GLP-compliant documentation requires a computer with special software. Contact Sartorius for a detailed description.

Setting:
Setup: Printout: ISO/GLP/GMP printout: Always on

The record is output to a Sartorius YDP03-0CE Data Printer or a computer.

End GLP printout:
● Press CF

End GLP printout while application is active:
This requires the following settings: Setup: Device settings: Keys: CF function in application: Clear only selected applications

● Press CF
> Text line: CF selected: clear application
● Press the **GLP** soft key

```
--------------------
17.01.2000      16:12
     SARTORIUS
Model          FCT01-X
Ser. no.     91205355
Vers. no.    01-42-02
ID     12345678901234
--------------------
L ID   12345678901234
nRef           10 pcs
wRef         1.35 g
Qnt    +       235 pcs
Qnt    +      4721 pcs
S ID   12345678901234
Qnt    +       567 pcs
--------------------
17.01.2000      16:13
Name:

--------------------
```

```
--------------------
17.01.2000      16:24
     SARTORIUS
Mod.           FCT01-X
Ser. no.     91205355
Vers. no.    01-42-02
ID
--------------------
Start:       ext.cal.
W ID
Nom    +    200.00 g
Diff. +       0.06 g
External adjustment
       completed
Diff. +       0.00 g

--------------------
17.01.2000      16:25
Name:

--------------------
```

Dotted line
Date/time
Scale manufacturer
Scale model
Scale serial number
Software version (display and control unit)
Scale ID no.
Dotted line
Weighing series no. (lot)
Application initialization value
Application initialization value
Counting result
Counting result
ID for counting result
Counting result
Dotted line
Date/time
Field for operator signature
Blank line
Dotted line

Record of Internal Calibration/Adjustment:
Dotted line
Date/time
Scale manufacturer
Scale model
Scale serial number
Software version (display and control unit)
Scale ID no.
Dotted line
Start mode for ext.calibration/adjustment
Weight set number
Exact calibration weight value
Difference after calibration/adjustment
Confirmation of completed calibration/adjustment routine
Difference between current and target values after calibration
Dotted line
Date/time
Field for operator signature
Blank line
Dotted line

Data Output Format (Line Format)

You can output the values displayed in the line for measured values and the weight unit with or without a data ID code

Example: Without data ID code

```
      +     253 pcs
```

Example: With data ID code

```
Qnt   +     253 pcs
```

Configure this parameter in the Setup menu (Setup: Printout: Line format).

The output with a data ID code has 16 characters; without a data ID code, 22 characters.

Output Format With 16 Characters

Display segments that are not activated are output as spaces. Characters without a decimal point are output without a decimal point.

The following characters can be output, depending on the characters displayed on the scale:

Normal Operation

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
or	–		.	.	.	.	.	.	.	.		*	*	*		
or	*		*	*	*	*	*	*	*	*						
or					0	0	0	0	0	0						

*: Space
D: Digit or letter
U: Unit symbol
CR: Carriage return
LF: Line feed

Special Codes

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	*	*	*	–	–	*	*	*	*	*	*	CR	LF
or							H	H								
or							L	L								
or							C									

*: Space
– –: Final readout mode
H: Overload
H H: Overload in checkweighing
L: Underload
L L: Underload in checkweighing
C: Cal/adjustment

Error Codes

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	*	*	*	E	r	r	*	*/#	#	#	*	*	*	*	CR	LF

*: Space
#: Error Code number

Example: output weight of + 1255.7 g

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	+	*	*	*	1	2	5	5	.	7	*	g	*	*	CR	LF

Position 1: Plus + or minus sign – or space
Position 2: Space
Positions 3–10: Weight with decimal point; leading zeros are output as spaces
Position 11: Space
Positions 12–14: Characters for unit of measure or space
Position 15: Carriage return
Position 16: Line feed

Data Output Format with 22 Characters

When data with an ID code is output, the ID code consisting of 6 characters precedes the data with the 16-character format. These 6 characters identify the subsequent value.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
I	I	I	I	I	I	+	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
	*	*	*	*	*	–		.	.	.	.	.	.	.	.		*	*	*		
						*		*	*	*	*	*	*	*	*						
										0	0	0	0	0	0						

I: ID code character[1)]
*: Space
D: Digit or letter
E: Unit symbol[1)] see "Toggle between Weight Units"
CR: Carriage return
LF: Line feed

[1)] depends on scale type; e.g., not all units and characters are available on scales verified for use in legal metrology

Special Codes

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	*	*	*	*	–	–	*	*	*	*	*	*	CR	LF
												H	H								
												L	L								
												C									

*: Space
– –: Final readout mode
H: Overload
H H: Overload in checkweighing
L: Underload
L L: Underload in checkweighing
C: Cal./adjustment

Error Codes

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
S	t	a	t	*	*	*	*	*	E	r	r	*	#	#	#	*	*	*	*	CR	LF

*: Space
#: Error code number

ID code characters I [1)]

Stat	Status
ID	Identification (Identifier)
L ID	Weighing series no. (lot)
W ID	Weight set number
Nom	Exact calibration weight (value)
S ID	Sample ID
NUM	Numeric ID
T1	Application tare memory 1
N	Net weight (T1 = 0)
N1	Net weight (T1≠ 0)
Qnt	Piece count
Prc	Percent
nRef	Reference sample quantity
pRef	Reference percentage
wRef	Reference piece weight
Wxx%	Reference percentage weight
mDef	Target value for animal weighing
Mul	Calculated result in animal weighing
x–Net	Result in animal weighing
x–Res	Calculated result in animal weighing
Res	Result using equation (calculation)
Setp	Targt value for checkweighing
Min	Lower limit for checkweighing
Max	Upper limit for checkweighing
Time	Time that a value was stored
Compxx	Component no. xx in formulation
Tot.cp	Total weight in formulation
n	Transaction counter
Total	Sum of all values
Avg.	Average in statistics
s	Standard deviation
srel	Variation coefficient
Diff	Difference between maximum and minimum

Data Input Format

You can connect a computer to your scale to send commands via the scale interface port to control scale functions and applications.

The commands sent are control commands and may have different formats; e.g., control commands can have up to 26 characters. Each character must be transmitted according to the settings configured in the Setup menu for data transmission.

Formate for Control Commands

Format 1:	Esc	!	CR	LF						
Format 2:	Esc	!	#	_	CR	LF				
Format 3:	Esc	!	#	&	(max. 20 &)		&	_	CR	LF
Format 4:	Esc	!	#	&	(max. 8 &)		&	_	CR	LF

Esc:	Escape	_:	Underline (ASCII: 95)
!:	Command character	CR:	Carriage Return (optional)
#:	Number	LF:	Line Feed (optional)
&:	Number or letter	max:	depends on command character; i.e., parameter: once the max. length is reached, input received is cut off, rather than rejected as with keyboard input

ASCII code chart
see chapter on "Overview"

Format 1

!	Meaning
K	Weighing mode 1
L	Weighing mode 2
M	Weighing mode 3
N	Weighing mode 4
O	Block keys
P	Print
R	Unblock keys
S	Restart
T	Tare and zero
Z	Internal calibration/adjustment

Format 2

!#	Meaning	
f3	Zero	
f4	Tare (without zeroing)	
kF1	Soft key 1*	Function depends on setting in application program
…		
kF6	Soft key 6*	
kF7	SETUP function key	
kF8	⏻ function key	
s3	CF function key	
x0	Perform internal calibration	
x1	Print scale model	
x2	Print serial no. of weighing	
x3	Software version of weighing platform	
x4	Software version of display & control unit	
x5	Print (GLP) scale ID no.	
x6	Print weight set "inventory" no.	
x7	Print weighing series no.	

Format 3 (not allowed in the Setup menu)

!#	Meaning
z5	Input (GLP) scale ID no.
z6	Input weight set "inventory" no.
z7	Print weighing series no.

Format 4

!	Meaning
t	Text input in display

* numbered from right to left

Synchronization

During data communication between the scale and an on-line device (computer), messages consisting of ASCII characters are transmitted via the interface. For error-free data communication, the parameters for baud rate, parity, handshake mode and character format must be the same for both units.

You can set these parameters in the Setup menu so that they match those of the on-line device. You can also define parameters in the scale to make data output dependent on various conditions. The conditions that can be configured are described under each of the application program descriptions.

If you do not plug a peripheral device into the scale interface port, this will not generate an error message.

Handshake

The scale interface (Sartorius Balance Interface = SBI) has transmit and receive buffers. You can define the handshake parameter in the Setup menu:

- Hardware handshake (CTS/DTR)
- Software handshake (XON, XOFF)

Hardware Handshake

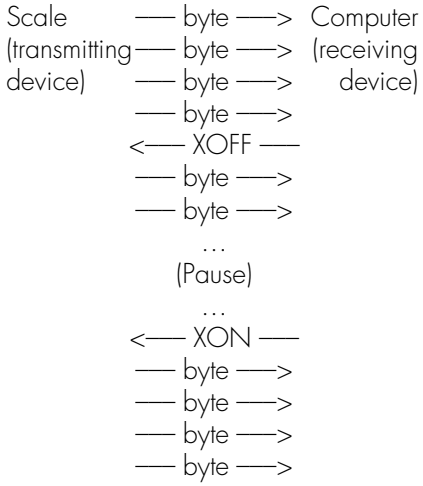
With a 4-wire interface, 1 more character can be transmitted after CTS (Clear to Send).

Software Handshake

The software handshake is controlled via XON and XOFF. When a device is switched on, XON must be transmitted to enable any connected device to communicate.

When the software handshake is configured in the Setup menu, the hardware handshake becomes active after the software handshake.

The data transmission sequence is as follows:



Transmitting Device:

Once XOFF has been received, it prevents further transmission of characters. When XON is received, it re-enables the transmitting device to send data.

Receiving Device:

XOFF is transmitted after the 26th character has been stored.
To prevent too many control commands from being received at one time, XON is not transmitted until the buffer is almost empty.

Activating Data Output

You can define the data output parameter so that output is activated either when a print command is received or automatically and synchronously with the scale display or at defined intervals (see application program descriptions and auto print setting).

Data Output by Print Command

The print command can be transmitted by pressing ⊙ or by a software command (Esc P).

Automatic Data Output

In the "auto print" operating mode, data are output to the interface port without an extra print command.
You can choose to have data output automatically at defined print intervals with or without the stability parameter. Whichever parameter you select, the data will be output as the readouts appear on the scale display. The display update frequency depends on both the model of the scale and the current operating status.

If you select the auto print setting, data will be transmitted immediately the moment you turn on the scale. In the Setup menu, you can configure whether this automatic output can be stopped and started by pressing ⊙.

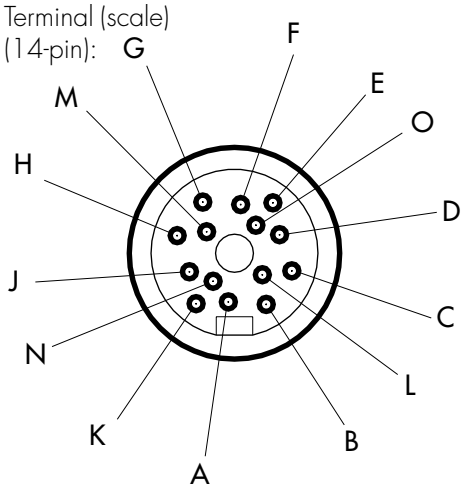
Pin Assignment Charts

Female Interface Connector:

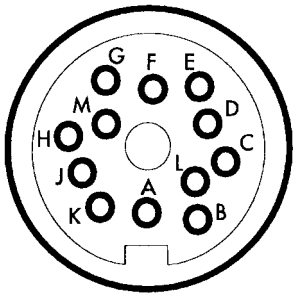
14-contact round connector, with screw-lock hardware for cable gland

Pin Assignment Chart

Terminal (scale)
(14-pin):



Zener Barrier YDI02-Z,
YDI03-Z (12 pin):



14-contact round connector	12-contact round connector	RS-232 signal (SBI and XBPI)	RS-485[1]) (XBPI)
G	A[3])	Control output "heavier"	Control output "heavier"
K	B	Data output (TxD)	RxD – TxD – N
J	C	Data input (RxD)	RxD – TxD – P
N	D	Data terminal ready (DTR)	
M	E	Signal GND	Signal GND
F	G[3])	Control input "lighter"	Control input "lighter"
A	H	Clear to send (CTS)	
E	J[3])	Control output "equal"	Control output "equal"
O	–	Universal switch [2])	Universal switch [2])
D	L[3])	Control output "set"	Control output "set"

Connect low-ohmic shield to the connector case

[1]) RS-485 interface available on request

[2]) For details, see "External Universal Remote Switch" under "Device Parameters".

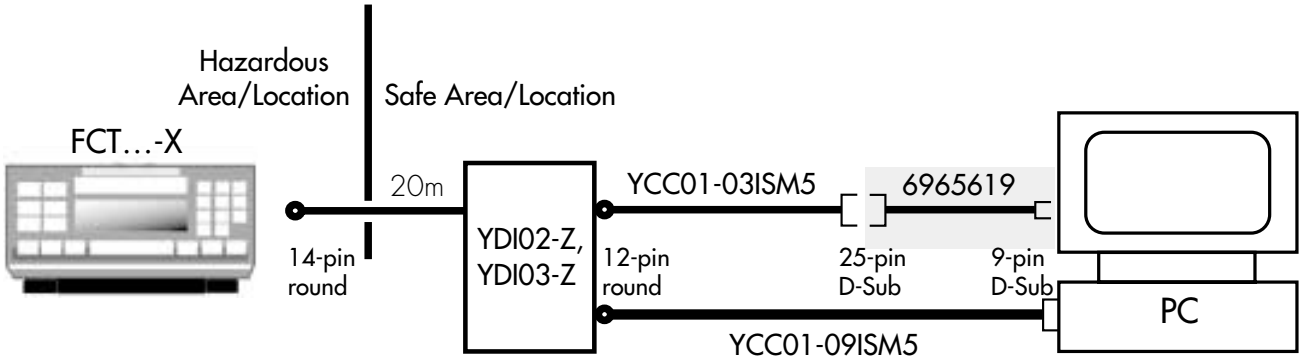
[3]) Control output available only for YDI03-Z

Important Note:

⚠ Only electrical equipment with a maximum voltage rating Vm of 250 V is permitted to be connected to the Zener barrier. The voltage rating V_z of this Zener barrier is 12 V.

⚠ Warning When Using Prewired RS-232 Connecting Cables

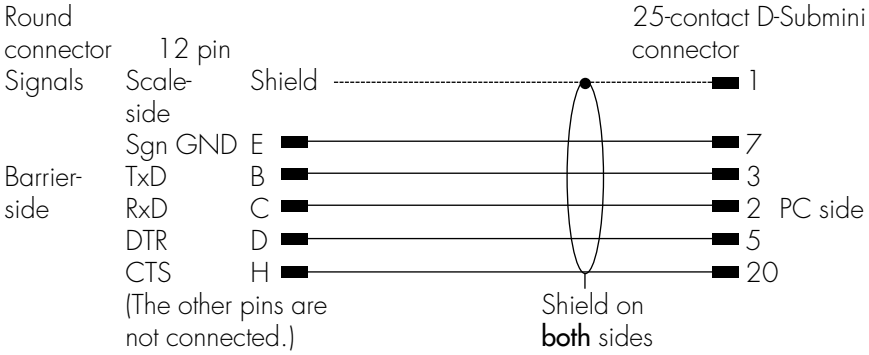
RS-232 cables purchased from other manufacturers often have incorrect pin assignments for use with Sartorius scales. Be sure to check the pin assignments against the chart below before connecting the cable, and disconnect any lines marked "Internally Connected" (e.g., pin 6). Failure to do so may damage or even completely ruin your scale and/or peripheral device.

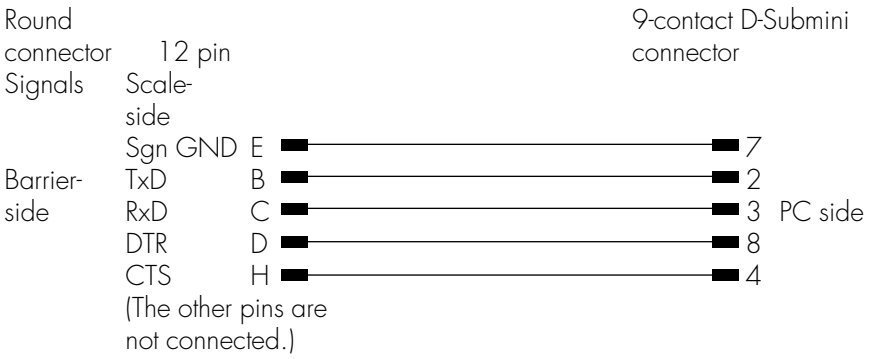


Cabling Diagram (Connecting Cable for PC)

(Connecting cable YCC01-03ISM5 – round – DB25-PC)
Diagram for interfacing a computer via a Zener barrier to the scale using the RS-232C/V24 standard and cables up to 15 m (50 ft) long

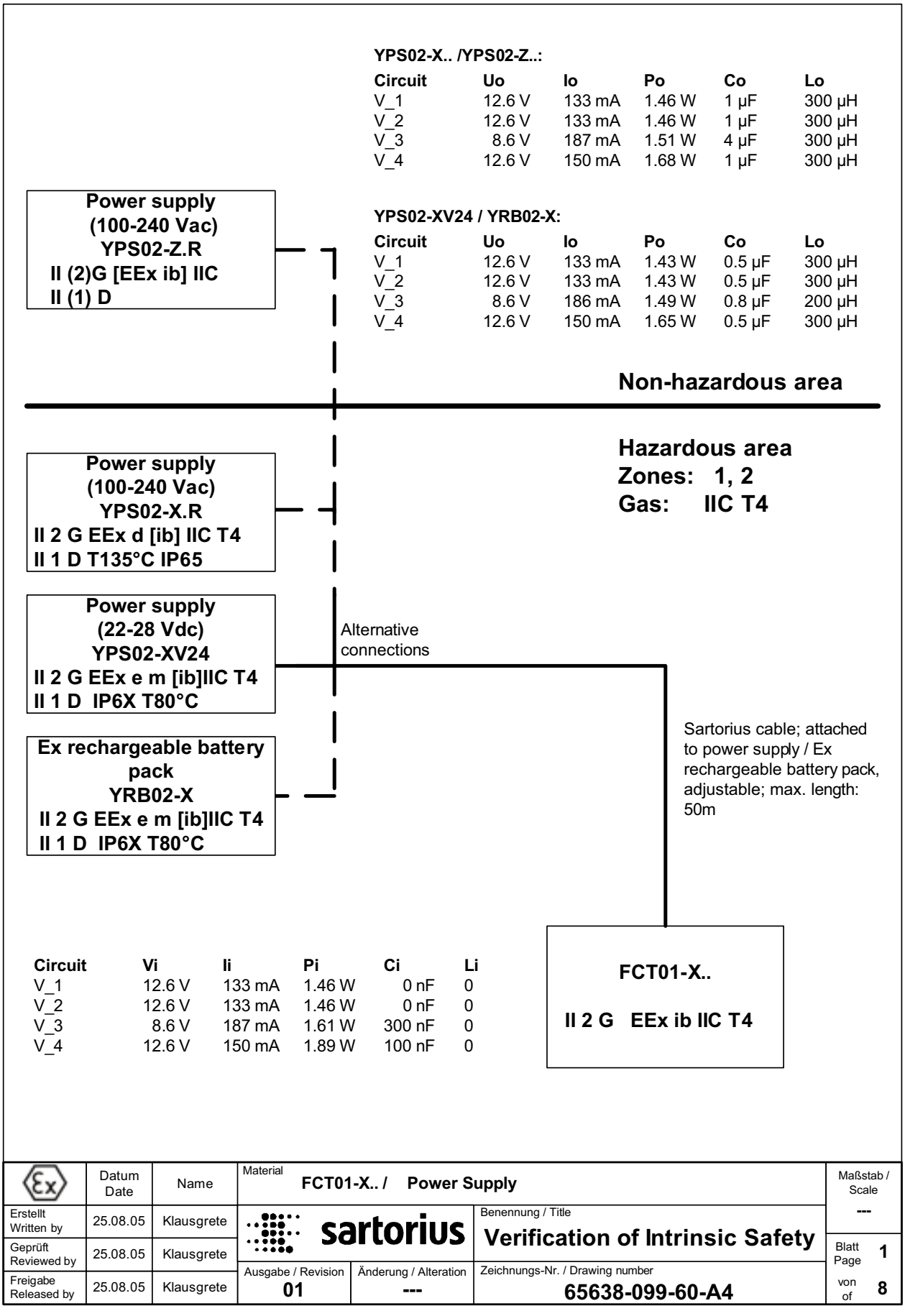
Cabling diagram:
Connection assignments for the cable from the Zener barrier to an RS-232 PC interface.





Important Note:

⚠ Only electrical equipment with a maximum voltage rating V_m of 250 V is permitted to be connected to the Zener barrier.
The voltage rating V_z of this Zener barrier is 12 V.


YPS02-X.. /YPS02-Z..:
Circuit Uo Io Po Co Lo
V_1 12.6 V 133 mA 1.46 W 1 µF 300 µH
V_2 12.6 V 133 mA 1.46 W 1 µF 300 µH
V_3 8.6 V 187 mA 1.51 W 4 µF 300 µH
V_4 12.6 V 150 mA 1.68 W 1 µF 300 µH
Power supply (100-240 Vac) YPS02-Z.R II (2)G [EEx ib] IIC II (1) D
YPS02-XV24 / YRB02-X:
Circuit Uo Io Po Co Lo
V_1 12.6 V 133 mA 1.43 W 0.5 µF 300 µH
V_2 12.6 V 133 mA 1.43 W 0.5 µF 300 µH
V_3 8.6 V 186 mA 1.49 W 0.8 µF 200 µH
V_4 12.6 V 150 mA 1.65 W 0.5 µF 300 µH
Non-hazardous area
Hazardous area
Zones: 1, 2
Gas: IIC T4
Power supply (100-240 Vac) YPS02-X.R II 2 G EEx d [ib] IIC T4 II 1 D T135°C IP65
Power supply (22-28 Vdc) YPS02-XV24 II 2 G EEx e m [ib]IIC T4 II 1 D IP6X T80°C
Ex rechargeable battery pack YRB02-X II 2 G EEx e m [ib]IIC T4 II 1 D IP6X T80°C
Alternative connections
Sartorius cable; attached to power supply / Ex rechargeable battery pack, adjustable; max. length: 50m
Circuit Vi Ii Pi Ci Li
V_1 12.6 V 133 mA 1.46 W 0 nF 0
V_2 12.6 V 133 mA 1.46 W 0 nF 0
V_3 8.6 V 187 mA 1.61 W 300 nF 0
V_4 12.6 V 150 mA 1.89 W 100 nF 0
FCT01-X..
II 2 G EEx ib IIC T4

	Datum Date	Name	Material FCT01-X.. / Power Supply		Maßstab / Scale
Erstellt Written by	25.08.05	Klausgrete	sartorius	Benennung / Title: Verification of Intrinsic Safety	---
Geprüft Reviewed by	25.08.05	Klausgrete			Blatt Page 1
Freigabe Released by	25.08.05	Klausgrete	Ausgabe / Revision: 01	Änderung / Alteration: ---	Zeichnungs-Nr. / Drawing number: 65638-099-60-A4 — von of 8

FCT01-X..

II 2 G EEx ib IIC T4

Circuit:	**Sensor Output**
Vo	12.6 V
Io	304 mA
Po	1.96 W (FCT01-X)[1)]
	1.34 W (FCT01-XV1)[2)]
Co	400 nF
Lo	230 µH

Hazardous area
Zones: 1, 2
Gas: IIC T4

Maximum values for 6- or 8-wire **shielded cable**:

Length	**C** (wire/wire)	**L**
100 m	500 nF/km	1000 µH/km
150 m	350 nF/km	720 µH/km
200 m	270 nF/km	550 µH/km

The resistance of each wire must be < 13 ohms (for operating reasons):
0.14 mm²: cables up to 90 m
0.25 mm²: cables up to 150 m
0.50 mm²: cables up to 320 m
Recommended type: LiYCY 6 x 0.5 mm² up to 150 m

If you use a cable longer than 50 m, the shield of the cable may not be connected to the housing of the weighing platform, or the weighing platform and indicator must be connected to each other to ensure low resistance (e.g. by connecting a equipotential bonding conductor).

Weighing platform CAPXS.-.....-....

II 2 GD EEx ib IIC T4
T135°C...155°C

Vi	13 V
Ii	483 mA
Pi	2.0 W
Ci	4 nF
Li	6 µH

Alternative connection

Weighing platform IFXS4-..... and IUXS4-.....
II 2G 1D EEx ib IIC T4
T155°C

Vi	13 V
Ii	425 mA
Pi	2.0 W
Ci	4 nF
Li	6 µH

1: For thermal protection, the sensor output current is limited to 213 mA.
2: For thermal protection, the sensor output current is limited to 106 mA.

	Datum Date	Name	Material / Benennung / Title	Maßstab / Scale
			FCT01-X.. / Weighing Platform Connection	---
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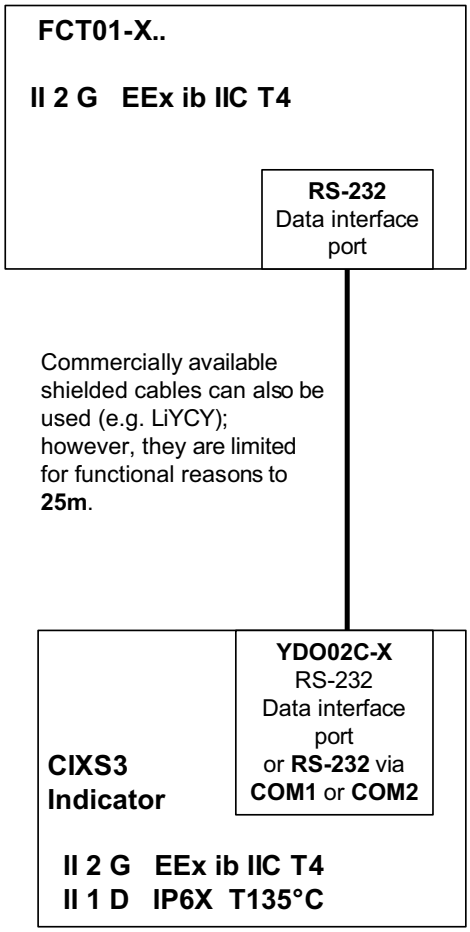
Hazardous area

Zones: 1, 2
Gas: IIC T4

RS-232 [1]

Vi	12.6 V	Vo	7.9V
Ii	340 mA *	Io	125 mA
Pi	1.08 W	Po	247 mW
Ci	3 nF	Co	7.7 µF
Li	0	Lo	2 mH


FCT01-X..
II 2 G EEx ib IIC T4
RS-232
Data interface port
Commercially available shielded cables can also be used (e.g. LiYCY); however, they are limited for functional reasons to 25m.
YDO02C-X
RS-232
Data interface port
or RS-232 via COM1 or COM2
CIXS3
Indicator
II 2 G EEx ib IIC T4
II 1 D IP6X T135°C

YDO02C-X [1]

Vi	12.6 V	Vo	11.8 V [2] / 23.6 V [3]
Ii	---	Io	62 mA *
Pi	---	Po	0.18 W *
Ci	0 nF	Co	1.41 µF [2]
Li	0 mH	Co	125 nF [3]
		Lo	8 mH
		Lo/Ro	175 µH/ohm

RS-232 Data interface port [1] COM1 (LV1) or COM 2 (LV3)

Vi	12.6 V	Vo	11.8 V [2] / 23.6 V [3]
Ii	328 mA*	Io	124 mA*
Pi	960 mW *	Po	70 mW *
Ci	0 nF	Co	1.5 µF [2] / 130 nF [3]
Li	0 mH	Lo	2.2 mH
		Lo/Ro	97 µH/ohm

Notes:

1: Combined circuits
2: Measured against the ground
3: Between signal lines
*: Ohmically limited

	Datum Date	Name	Material	FCT01-X.. / RS-232 Connection to CIXS3		Maßstab / Scale
Erstellt Written by	25.08.05	Klausgrete	sartorius	Benennung / Title: Verification of Intrinsic Safety		---
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YDI05-Z.. [1]

Vo	12.4 V	Vi	12.6 V
	24.8 V [3]		25.2 V [3]
Io	260 mA *	Ii	any
Po	800 mW *	Pi	any
Co	1.24 µF [2]	Ci	0
	112 nF [3]		
Lo	400 µH	Li	0
Lo/Ro	44 µH/ohm		
	22 µH/ohm [3]		

Z966 [1] in **YDI02-Z..**

Vo	12 V
	24 V [3]
Io	328 mA *
Po	0.96 W *
Co	1.41 µF [2]
	125 nF [3]
Lo	300 µH
Lo/Ro	36 µH/ohm
	36 µH/ohm [3]

YCO01-Y [1]

Vo	11.8 V	Vi	12.6 V
	23.6 V [3]		25.2 V [3]
Io	123 mA *	Ii	131 mA
Po	361 mW *	Pi	any
Co	1.5 µF [2]	Ci	0.5 nF
	129 nF [3]		
Lo	2 mH	Li	0.8 µH
Lo/Ro	98 µH/ohm		
	98 µH/ohm [3]		

YDI05-Z.. interface converter
II (2) GD [EEx ib] IIC or
Z966 Zener barrier [4]
in YDI02-Z..: II (2) G [EEx ib] IIC or
YCO01-Y interface converter [6]
II (2) GD [EEx ib] IIC or
II 3 (2)GD EEx nR[ib]IIC T4

Non-hazardous area

Hazardous area
Zones: 1, 2
Gas: IIC T4

6-wire standard cable with up to 0.5 mm² thick wires with 250 nF/km max., 750 µH/km and 34 ohms/km min. has 22 µH/ohm. Cable length (**flexible installation**) is limited to **under 25m** due to RS-232 specifications.

6-wire cable type PR6136 (Lmax = 1.1 mH/km; Cmax = 220 nF/km; Rmin = 26 ohms/km: 43 µH/ohm): under 25 m (see above).

YPE05-X[5] Foot switch — YTE02-X[5] T-connector

RS-232 [1]

Vi	12.6 V	Uo	7.9 V
Ii	340 mA *	Io	125 mA
Pi	1.08 W	Po	247 mW
Ci	3 nF	Co	7.7 µF
Li	0	Lo	2 mH

RS-232
Data interface port

FCT01-X..

II 2 G EEx ib IIC T4

Notes:
1: Combined circuits
2: Measured against the ground
3: Between signal lines
4: BAS01ATEX7005; II (1) GD [EEx ia] IIC; parameters converted
5: Option; passive wiring only
6: Approved for Zones 2 and 22 hazardous areas with gas: IIC / IIB T4 and dust: T80°C; only when USB port is sealed and restricted breathing is maintained.
*: Ohmically limited

	Datum Date	Name	Material		Maßstab / Scale
			FCT01-X.. / RS-232 Data Interface Port		---
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RS-422 Data interface port of YCO01-Y [1]

Vo	7.2 V 8.0 V [3]	Vi	12.6 V 25.2 V [3]
Io	207 mA *	Ii	1.5 A
Po	330 mW	Pi	2.5 W
Co	13.5 µF [2] 8.4 µF [3]	Ci	1 nF
Lo	0.7 mH 3 mH (IIB)	Li	1.6 µH
Lo/Ro	36 µH/ohm 36 µH/ohm [3]		

RS-422 Data interface port of YDI05-Z [1]

Vo	6.0 V 6.8 V [3]	Vi	12.6 V 25.2 V [3]
Io	172 mA *	Ii	0.2 A
Po	0.5 W *	Pi	2.3 W
Co	12 µF [2] 17.7 µF [3]	Ci	28 µF [2] 200 nF [3]
Lo	0,7 mH (IIC) 5 mH (IIB)	Li	2 µH

YDI05-Z..
Interface converter
II (2) GD [EEx ib] IIC

YCO01-Y [5]
Interface converter

Alternative connection

Non-hazardous area

Hazardous area
Zones: 1, 2
Gas: IIC / IIB T4

Cable:
10-wire standard cable with up to 0.5 mm² thick wires with 250 nF/km max., 1000 µH/km and 34 ohms/km min. has approx. 30 µH/ohm. Cable length (**flexible installation**) is limited to under **1000 m**.

RS-422 Data interface port [1]

Vo	12.6 V	Vi	7.5 V
Io	180 mA *	Ii	0.5 A *
Po	0.57 W *	Pi	0.9 W
Co	1.15 µF (IIC) 7.4 µF (IIB)	Ci	5.5 µF [4]
Lo	0.7 mH (IIC) 4 mH (IIB)	Li	2 µH
Lo/Ro	62 µH/ohm (IIC) 250 µH/ohm (IIB)		

RS-422
Data interface port

FCT01-X..

II 2 G EEx ib IIC T4

Notes:
1: Combined circuits
2: Measured against the ground
3: Between signal lines
4: Measured against the ground and limited internally to 8.7V
5: Approved for Zones 2 and 22 hazardous areas with gas: IIC / IIB T4 and dust: T80°C; only when USB connection is sealed and restricted breathing is maintained.
* : Ohmically limited

	Datum Date	Name	Material: FCT01-X.. / RS-422 Data Interface Port		Maßstab / Scale
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YDI05-Z.. [1,7]

Vo	12.4 V	Vi	12.6 V
	24.8 V [3]		25.2 V [3]
Io	130 mA *)	Ii	any
Po	400 mW	Pi	any
Co	1.24 µF [2]	Ci	0
	112 nF [3]		
Lo	2 mH	Li	0
Lo/Ro	180 µH/ohm		
	70 µH/ohm[3]		

Z966 [1,6] in YDI01-Z

Vo	12 V
	24V [3]
Io	614 mA
Po	0.48 W
Co	1.41 µF[2]
	125 nF[3]
Lo	1.38 mH
Lo/Ro	57 µH/ohm

YCO01-Y [1]

Vo	7.2 V	Vi	12.6 V
	8.0 V [3]		25.2 V [3]
Io	207 mA *	Ii	1.5 A
Po	330 mW	Pi	2.5 W
Co	13.5 µF [2]	Ci	1 nF
	8.4 µF [3]		
Lo	0.7 mH	Li	1.6 µH
Lo/Ro	36 µH/ohm		
	36 µH/ohm[3]		

YDI05-Z.. interface converter
II (2) GD [EEx ib] IIC or
Z966 Zener barrier [7)]
(in YDI01-Z) II (2) G [EEx ib] IIC or
YCO01-Y interface converter [8]
II (2) GD [EEx ib] IIC or
II 3 (2)GD EEx nR[ib]IIC T4

Non-hazardous area

Hazardous area
Zones: 1, 2
Gas: IIC T4

Up to 7 additional
WZ.....-X.... /
CIXS3 / FC/FCA/IS.....-.X.. [4]
or **FCT01-X..**[5]

Data cable:
Recommended: Sartorius cable **YCC485-X** with approx. 10 µH/W and 120 pF/m (wire/ wire) **flexibly installed up to 1000 m**.

RS-485 data interface port [1]

Vo	12.6 V	Vi	12.6 V
Io	85 mA*	Ii	810 mA*
Po	0.27 W	Pi	2.5 W
Co	1.15 µF [2]	Ci	12 nF[3]
Lo	5 mH	Li	15 µH
Lo/Ro	118 µH/ohm		

RS-485
Data interface port

FCT01-X..
II 2 G EEx ib IIC T4

Cable: install as stationary and protected equipment!
For cables with a maximum of 125 pF/m (wire versus wire):

Number of units in the hazardous area	Cable length m	Lo/Ro or µH/ohm	Lo µH/km
2	1000	61	400
4	1000	34	115
6	1000	22	46
8	1000	17	25
8	100	17	250
8	35	17	710

See also table in KEMA 02ATEX1108X, page 3/4

Notes:
1: Combined circuits
2: Measured against the ground
3: Between signal lines
4: Not all models can be used in Zones 21, 22
5: Not for use in Zones 21, 22
6: BAS01ATEX7005; II (1) GD [EEx ia] IIC
7: Only 2 RS-232 ports for YDI05-Z are used
8: Approved for Zones 2 and 22 hazardous areas with gas: IIC / IIB T4 and dust: T80°C; only when USB port is sealed and restricted breathing is maintained.
* : Ohmically limited

	Datum Date	Name	Material: FCT01-X.. / RS-485 Data Interface Port			Maßstab / Scale
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TTY-10 data interface port [1] (LV6)

Vo	12.6 V
Io	11 mA
Po	127 mW
Co	400 nF (IIC) 700nF (IIB)
Lo	500 µH

YCO01-Y [2]

Interface converter

TTY-(10mA) data interface port

Non-hazardous area

Hazardous area
Zones: 1, 2
Gas: IIC T4

Sartorius cable **YCCTTY10-X** (4*0.5 mm² (LiYC)YCY) or Sartorius cable **YCC232-X** (5*0.5 mm² LiYCY); each laid **fixed and shielded**

Length is limited by function to:

up to 300 m	up to 1200 bit/s
up to 150 m	up to 2400 bit/s
up to 65 m	up to 4800 bit/s
up to 30 m	up to 9600 bit/s
up to 15 m	up to19200 bit/s

TTY data interface port [1]

Vi	14.7 V
Ii	130 mA or 50 mA
Pi	100 mW or 265 mW
Ci	0
Li	0

TTY
Data interface port

FCT01-X..

II 2 G EEx ib IIC T4

Notes:
1: Per circuit
2: Approved for Zones 2 and 22 hazardous areas with gas: IIC / IIB T4 and dust: T80°C; only when USB port is sealed and restricted breathing is maintained.

	Datum Date	Name	Material / FCT01-X.. / TTY Data Interface Port			Maßstab / Scale
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Circuit:	**RS-232** [1]	**Control signals** [1]
Vo	12 V	12 V
Io	82 mA	7.5 mA
Po	240 mW	22 mW
Co	1.41 µF	1.41 µF
Lo	5.5 mH	5.5 mH
Lo/Ro	144 µH/ohm	1.5 mH/ohm

Barrier YDI03-Z

Non-hazardous area

Hazardous area
Zones: 1, 2
Gas: IIC T4

Cable: install as **stationary and protected equipment!** Maximum cable length 70 m for a 10-wire standard cable with a maximum of 200 nF/km and 1 mH/km.

The length of the installed cable is defined as 20 m because of the RS-232 specifications.

Data interface port	**RS-232** (pins A/J/K/N and M)[1]	**Control signals** (pins C/D/E/F/G and M)[1]
Vi	12.6 V	12.6 V
Ii	85 mA	10 mA
Pi	270 mW	30 mW
Ci	3 nF	4 nF
Li	0	0

YPE05-X* Foot switch

RS-232 Data interface port

FCT01-X..

II 2 G EEx ib IIC T4

System assessment
(see EC-Type Examination Certificate KEMA 02ATEX1108 X):
Co <= 125 nF; Lo <= 100 µH; Lo/Ro <= 33 µH/W

Notes:
1: Per circuit
2: Combined circuits
***: Option; only passive wiring (not zone 20), can also be connected by a separate cable gland**

	Datum Date	Name	Material / Benennung / Title		Maßstab / Scale
			FCT01-X.. / Control Lines, Separate Foot Switch		---
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Service

Configuring the Analog/Digital Converter

Purpose

Configure the analog/digital converter by selecting the required parameters in the Setup menu to adapt your FCT01 terminal for use with all commercially available strain-gauge load cells, as well as with Sartorius IWA, IU or IF analog weighing platforms. Access to settings for A/D converter configuration is password-protected.

Features

With the menu access switch open, you can configure the following parameters:

- Weighing mode: "standard" or "trade" (scale verified for use in trade/in legal metrology)
- Verifcation scale interval e
- Scale interval d
- Minimum capacity
- Maximum capacity
- Maximum capacity for each weighing range
- Verification scale interval e for each weighing range
- Accessibility of weight units

These parameters are not reset when you restore factory settings.

Depending on the weighing mode selected, the configuration options for parameters not listed above are the same as they are in a corresponding Sartorius weighing instrument that cannot be switched between "standard" and "trade" modes.

Note on Settings

Configure the maximum capacity for each weighing range in a suitable weight unit, without values other than "0" in decimal places. Select the desired weight unit under the "Lock units" menu item. For purposes of display in the metrology line, the maximum capacity for all ranges must be configured so that they can be displayed with a maximum of 4 digits other than "0" for all available weight units. The same applies for releasing and locking weight units 1 and 2. The unit selected for configuration cannot be excluded.

Testing and Configuration for Use in Legal Metrology

The metrological data is displayed for approximately 2 seconds for each range in sequence in the metrology line when you switch on the weighing instrument. After configuration, calibration and adjustment, return the menu access switch to the "closed" position.

Unter Setup: Balance/Scale functions: Weight unit 1, you can check to make sure that only the permissible weight units are accessible.

Description of the Individual Menu Items

Standard Scale **Standard** or Verified/Verifiable Scale (Legal for Trade) **Trade**

When you configure the weighing instrument, you must define whether or not it is to be used for legal metrology.

Class

For a verified or verifiable weighing instrument, you need to select the accuracy class. Which class you should select depends on the weighing platform. The only settings permitted in legal metrology are Classes (II), (III) and (IIII).

Ranges

The weighing range can be divided into multiple ranges, if desired.

Single-range Weighing Instrument

The entire weighing range is divided into scale intervals which are dependent on the lowest scale interval d and the maximum capacity. Readability for the entire weighing range is always the lowest scale interval d.

Multi-interval Weighing Instrument

These weighing ranges can have different levels of accuracy. The multi-interval function divides the weighing range into as many as 4 ranges, each with a different readability. This means that the weight readout is displayed with the accuracy of the particular weight range. The readability automatically adjusts each time the weight on the load receptor exceeds the defined limit of a range subdivision. When a weight causes the weighing instrument to change from a higher to a lower range, the higher resolution is automatically selected. After taring, the highest possible resolution of the first range is restored, even when the weighing platform is loaded.

Scale Interval **d**:

The lowest scale interval d indicates the weighing instrument's resolution. The scale intervals possible are: 1, 2, 5, 10, 20, 50, etc. If you have selected the "trade" setting with accuracy class (III) or (IIII), the lowest scale interval is not prompted because it is equal to the verification scale interval.

Verification Scale Interval **E**:

The smallest verification scale interval e indicates the resolution of this weighing instrument in legal metrology. With accuracy class (III) or (IIII), the verification scale interval e is the same as the scale interval d. Thus with classes (III) and (IIII), the lowest scale interval d is not prompted.

Minimum Capacity **Min. cap.**:

The minimum capacity indicates the minimum weight with which a weighing instrument may be used in legal metrology (legal-for-trade use). The minimum capacity for weighing instruments of accuracy class (III) is 20e, and for class (IIII), 10e.

Note: Minimum capacity limits have the function of warning the equipment operator that loads below these limits lead to cumulative addition of tolerances, which can result in significant errors of measurement. In Germany, for example, weighing below the minimum capacity is not permitted.

Range 1, **Range 2**, **Range 3**:

Enter the limits for each range. When a given limit is exceeded, the accuracy changes.

The following applies for all limits:

Range 1 ≤ Range 2 ≤ Range 3 ≤ Max. cap.

Thus you can divide the weighing range into 4 ranges. The display resolution changes in intervals of 1, 2, 5, 10, 20, 50, etc. The lowest resolution is the lowest scale interval d. Ranges you do not require should be set to 0.

Maximum capacity **Max. cap.**:

The maximum capacity is the maximum load that may be placed on the weighing instrument. If the weight exceeds this capacity, the weighing instrument will display **H**.

The scale intervals are calculated from the maximum capacity and the lowest scale interval d. In legal metrology, the value of the scale intervals in a multiple range weighing instrument may attain up to 6000e per range. In the »standard« weighing mode, as opposed to »trade«, you can define a "SuperRange" to increase the permitted intervals. For example, a maximum capacity of 60.000 kg combined with a smallest interval d of 0.001 kg yields 60,000 scale intervals. These parameters, however, may be influenced by physical limitations.

Lock units:

With this function, you can make particular weighing units inaccessible during weighing (e.g., for legal metrology). Accessible units are marked by "*" in the display.

Calibration/Adjustment Unit:

The calibration unit defines the weight unit with which calibration must be performed. This unit will be used even if a different unit has been selected for the weighing mode.

Adjustment without weights:

The parameters for nominal capacity in kg (specification of the strain-gauge beam), resolution in kg and sensitivity in mV/V are converted to internal quantities. Once the A/D converter configuration data has been stored, these parameters can no longer be read out.

Save data:

Save the configuration settings and exit the menu.

Once these parameters have been configured, the A/D converter in conjunction with the weighing cell is defined as a weighing instrument. The A/D converter, in conjunction with the weighing platform, can now be used like any standard weighing platform.

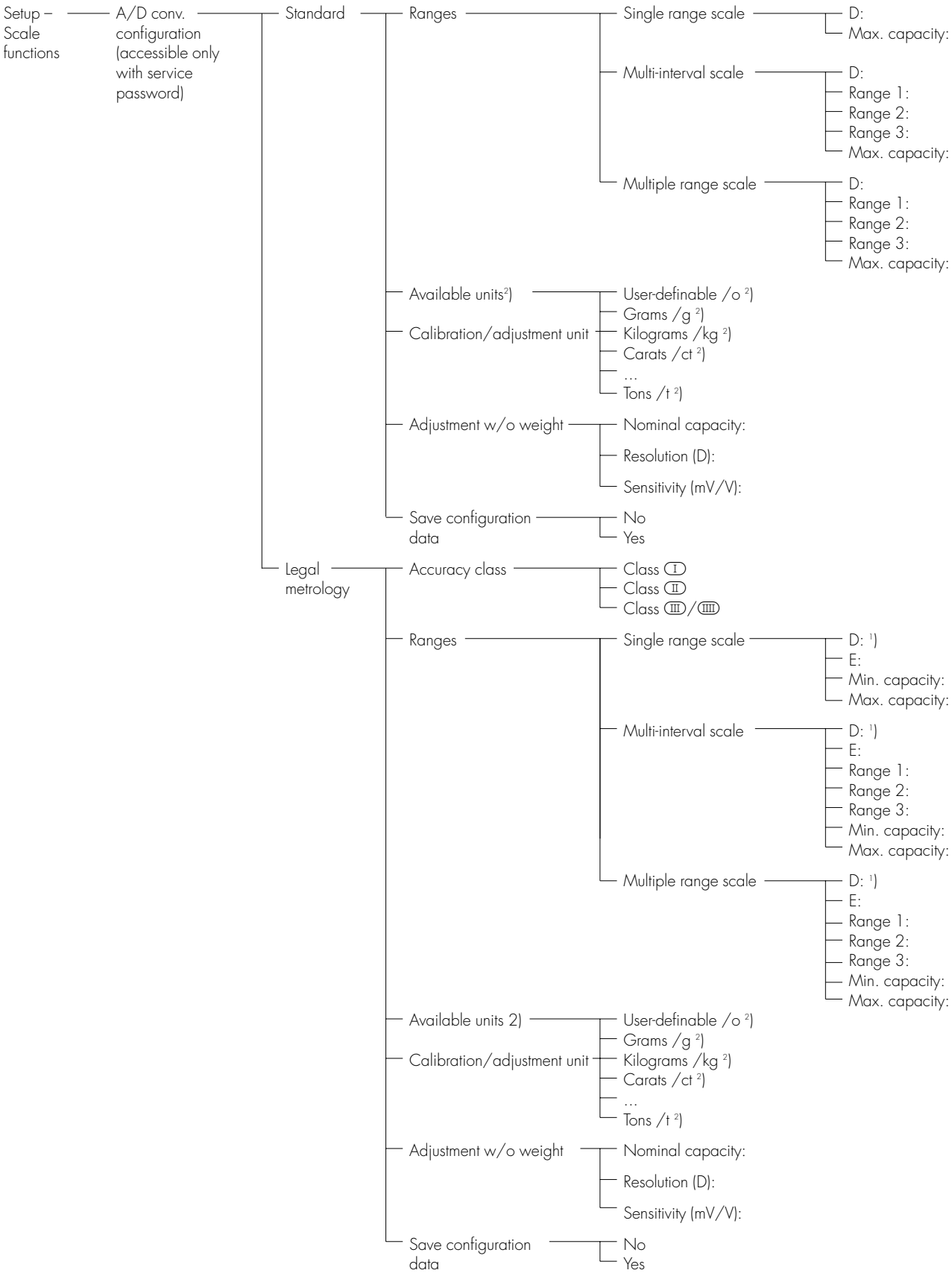
Important Note:
Please do not forget to relock the menu access switch when you have finished configuring the A/D converter.

In addition, the weight unit must be defined and the weighing platform adjusted (calibration, adjustment and linearization). For detailed instructions, see the next section: "Adjustments in Service Mode".

Weighing results can no longer be influenced by the industrial terminal after the A/D converter has been configured. The range of available weighing instrument functions is defined in the A/D converter. The following functions, for example, can be activated:

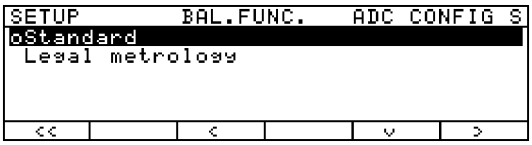
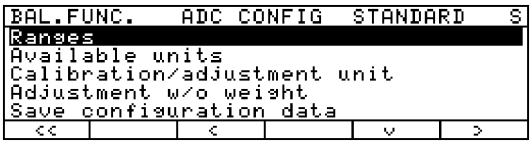
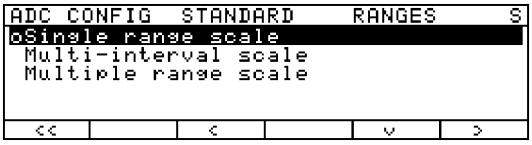
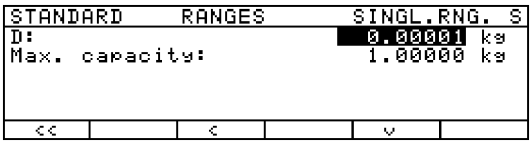
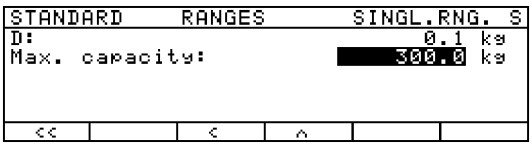
- Read weighing results
- Display metrological data
- Tare
- Calibrate/adjust
- Read tare value
- Save/delete tare input

Balance/Scale Functions (Overview)



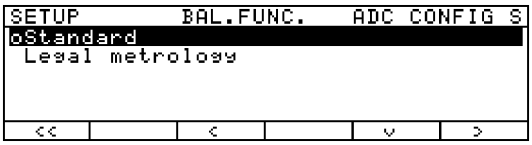
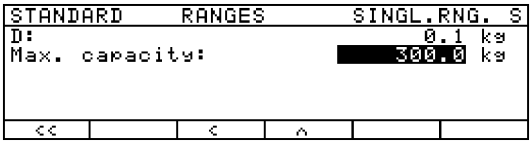
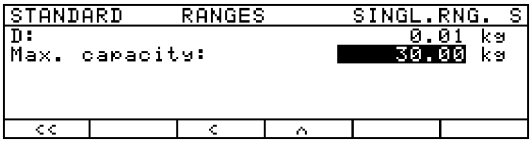
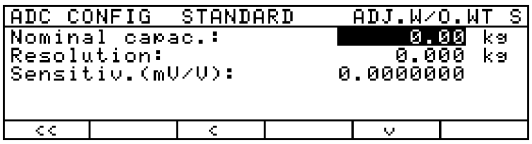
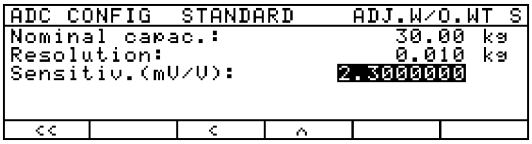
1) = only for accuracy class I, II
2) = selectable units are identified by an "*" ; press ↵ soft key to remove unit from list

Example 1: Configuring the A/D Converter with a Weighing Platform Connected (such as a Sartorius IWA platform)

Step	Press key(s) (or follow instructions)	Display/Output
1. Remove the cap from the back of the scale housing and move the switch to the right		
2. Turn the terminal off and back on		
3. Enter the service password and select "Balance/scale functions"	* * * * * * * * SETUP	
4. Select "ADC configuration"	> soft key twice	
5. Select "Standard" and confirm	> soft key	
6. Select "Ranges" and confirm	> soft key	
7. Select "Single-range scale" and confirm	> soft key	
8. Enter and confirm the scale interval "d" and maximum capacity (in this example, 0.1 and 300 kg)	0 . 1 and ↵ soft key, 3 0 0 and ↵ soft key	
9. Save the data entered	« soft key and then Yes soft key	
10. Calibrate/adjust the scale: see "Operating the Scale" in this manual, or refer to the service manual		
11. Return the menu access switch to the left-hand position		
12. Turn the terminal off and back on	I/⏻ key	

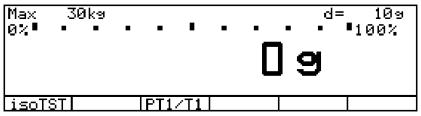
Example 2: Configuring the A/D Converter with a Weighing Platform Connected

Settings (changes in the factory settings required for this example)
Setup: Balance/scale functions: Tare/zero at power on: Off

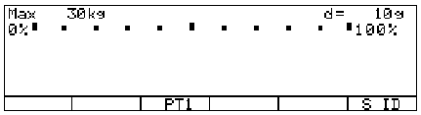
Step	Press key(s) (or follow instructions)	Display/Output
1. Remove the cap from the back of the scale housing and move the switch to the right		
2. Turn the terminal off and back on		
3. Enter the service password and select "Balance/scale functions"	* * * * * * * * [SETUP]	
4. Select "ADC configuration"	> soft key twice	
5. Select "Single-range scale" and confirm	> soft key 3 times	
6. Enter and confirm the scale interval "d"* and maximum capacity (in this example, 0.01 and 30 kg)	[0] [.] [0] [1] and ↵ soft key, [3] [0] and ↵ soft key	
7. Select "Adjustment without weight"	< soft key twice, v soft key 3 times, > soft key	
8. Enter the nominal capacity[1] (in this example: 20 kg), resolution[2] (0.01 kg) and sensitivity mV/V (2.0; refer to service specifications) and confirm	[2] [0] and ↵ soft key [0] [.] [0] [1] and ↵ soft key [2] [.] [0] and ↵ soft key	
9. Save data entered	<< soft key and then Yes soft key	
10. Set the preload: see next chapter on "Calibration/Adjustment in the Service Mode"		
11. Return the menu access switch to the left-hand position		
12. Turn the terminal off and back on	[I/⏻] key	

[1]) For platforms that have several load cells, please multiply the nominal capacity accordingly.
[2]) The value entered for resolution must be within the "d" range

Activating the Service Mode



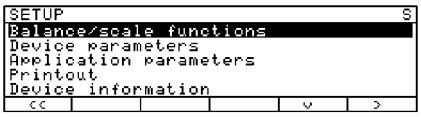
– The "S" service mode enables extensive adjustments to be performed.



– Select the weighing mode (display shows **0g** – depending on the model)

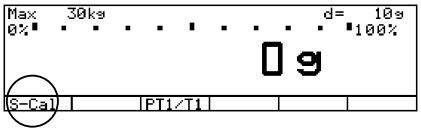
– Enter service code "XXXXXX"

– Press the SETUP key



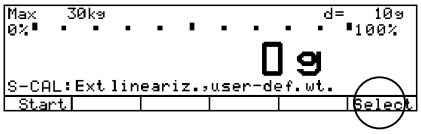
– The **SETUP** menu is displayed with an "**S**" in the upper right-hand corner of the display.

– Press the « softkey



– The service mode is now active.

– **S-CAL** is displayed.



– Press the **S-CAL** soft key.

– Select the required adjustment routine using the **Select** soft key.

– Start the adjustment sequence by pressing the **Start** soft key.

Note:
Stop the adjustment routine by pressing the CF key once.
Press the CF key a second time to exit the service mode.

Calibration/Adjustment in the Service Mode

The following functions are available when working in the service mode:

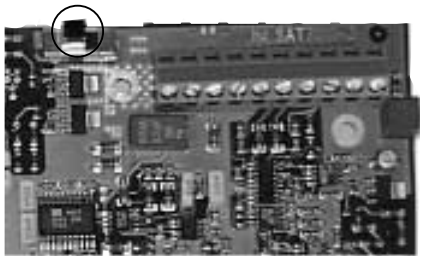
Recommended order: 1–2–3

2 ┌ Ext. lineariz.; user-def. wt.
├ Set preload
├ Clear preload
├ Determine user-def. wt.
├ Display*10
1 / 3 ├ Extern. adj. factory-def. wt. *
├ Ext. adj. auto. detect. (external adjustment with automatic
└ Ext. adj. user-def. wt. * detection of calibration weight)

* Can also be adjusted without activating the service mode

Note:
Service software is not required for configuring and adjusting the evaluation unit.

Off <———> On



When starting up operations for the first time, the service switch must be off (see photo on the left).

Once all work has been completed, the switch must be on (see photo on the left). This is necessary in order to activate the ± 2% window and to prevent reconfiguration of the A/D-converter. Error message **Err 07** will prevent you from setting or deleting the preload.

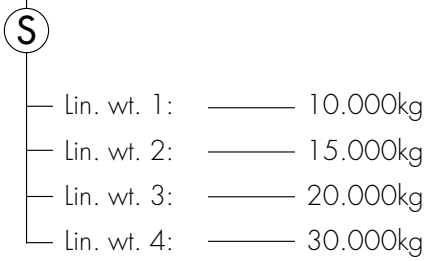
Note!
Whenever the service switch has been on, the control unit must be turned off and on again once in order to activate the programmed functions.

Enter Operator's Weights

Weighing parameters (linearization weights can be changed only in the service mode)

Setup

Device parameter
ADC configuration (only visible in the service mode)
Calibration/adjustment
Function CAL key



S-CAL Functions (sequence of the lin./calibr. and adjustment routine)

Perform external linearization with user-defined weights

S-CAL: Ext. lineariz.; user-def. wt.

Press key	Display		Action
"TARE"	0.000 kg		
"Start"	0.000 kg		
	−10.000 kg	⚠	Place weight on pan: 10 kg
	10.000 kg	⚠	**Wait until 0.00X kg is displayed**
"Start"	+0.002 kg	⚠	
	−15.000 kg	⚠	Place weight on pan: 15 kg
	15.000 kg	⚠	**Wait until 0.00X kg is displayed**
"Start"	+0.004 kg	⚠	
	−20.000 kg	⚠	Place weight on pan: 20 kg
	20.000 kg	⚠	**Wait until 0.00X kg is displayed**
"Start"	+0.005 kg	⚠	
	−30.000 kg	⚠	Place weight on pan: 30 kg
	30.000 kg	⚠	**Wait until 0.00X kg is displayed**
"Start"	0.009 kg	⚠	
	+0.000 kg	⚠	Remove weights from pan
	0.000 kg	⚠	**Wait until the adjustment routine**
	0.000 kg		**has been completed**

Set/Delete Preload

The preload can only be set or deleted when the service switch is off (after opening the switch, turn the display unit off and on again once). After you exit the adjustment, adjust the service switch to "on" and activate the display unit by turning it off and back on again once. This activates the L/H display.
The preload adjustment is dependent on the type of platform connected.

Set Preload

S-CAL: Set preload:

Press key	Display		Action
	0.000 kg		Place weight on pan: 8 kg
"Start"	8.000 kg	⚠	
	0.000 kg		**Press CF to end routine**

Clear Preload

S-CAL: Clear preload:

Press key	Display		Action
	0.000 kg −8.000 kg		Remove weights from pan
"Start"	−8.000 kg	⚠	
	0.000 kg		**Press CF to end routine**

Determine User-defined Weight

S-CAL: Determining user-def. wt.:

Press key	Display		Action
	0.000 kg		
"Start"	−3.000 kg	⚠	Place weight on pan: e.g. 20 kg
	+17.000 kg	⚠	**Wait until +17.000 kg is displayed**
"Start"	+17.000 kg	⚠	
	20.000 kg		**Press CF to end routine**

Display *10

S-CAL: Display *10:

Press key	Display		Action
	0.000 kg		
"Start"	0.0000 kg	⚠	
"End"	0.000 kg		**Routine ended**

External Calibration/Span Adjustment with Default Weights

S–CAL: Extern. adj. factory-def. wt. *

Press key	Display		Action
"Tare"	0.000 kg		
"Start"	–20.0000 kg	⚠	Place weight on pan: 20 kg
	+0.003 kg	⚠	Wait until 0.00X kg is displayed
"Start"	20.000 kg		Press CF to end routine

External Adjustment with Automatic Weight Detection

S–CAL: Ext. adj. auto detect

Press key	Display		Action
"Tare"	0.000 kg		
"Start"	–20.0000 kg	⚠	Place weight on pan: 20 kg (Tolerance of the weight: ± 2%)
	+0.002 kg	⚠	Wait until 0.002 kg is displayed
"Start"	20.000 kg		Press CF to end routine

External Calibration/Adjustment with Operator's Weights

S–CAL: Ext. adj. user-def. wt. *

Press key	Display		Action
"Tare"	0.000 kg		
"Start"	–25.0000 kg	⚠	Place weight on pan: 25 kg
	+0.002 kg	⚠	Wait until 0.002 kg is displayed
"Start"	20.000 kg		Press CF to end routine

* Can also be adjusted without activating the service mode

Replacing the PCB

When replacing the PCB, always make sure before you re-insert the PCB that there is enough heat-conducting paste between the housing and the cooling surfaces of the electronic components.
Before closing the unit back up, you must also check all seals between the housing and the display unit and replace them if necessary.

Note:
– Make sure the spacers are positioned properly!

– The PCBs are intrinsically safe. Therefore, you do not have to conduct a high-voltage test after you reassemble the unit.

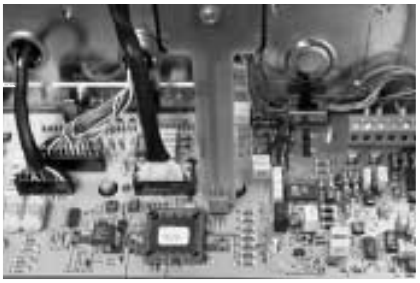
– If you conduct a high-voltage test, the electronic components on the PCB will definitely be destroyed.

– Only technicians certified by Sartorius to work on explosion protected equipment may perform soldering work on the PCB!

SBI/BPI Toggling

SBI/BPI toggling is only required if it is necessary to overwrite the data on the value processor.
Afterwards, it is imperative that you run the "Close Function" with the Service Software "SARTOCAS" or with PSION. Turn the control unit "Off/On" again once to re-activate the SBI protocol.
The BPI mode is not required for configuring the display and control unit or for adjusting connected load cells.

Procedure for SBI/BPI Toggling

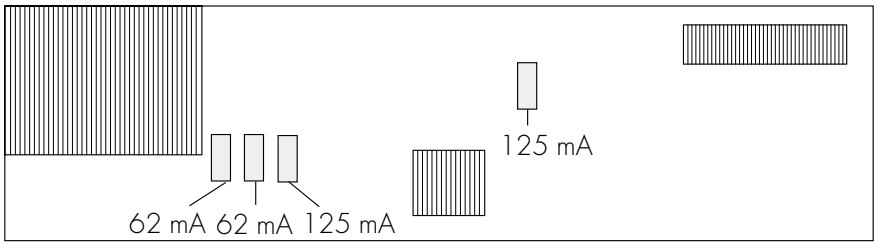


- Turn off the scale
- Connect the mode adapter (6740-63)
- Turn on the scale
- The weighing result is displayed. Then press the button on the mode adapter for about 3 seconds (the display will go blank briefly)
- Release the switch
- Remove mode adapter
- Turn the scale off and on again

Replacing Fuses on the PCB

If the wrong load cell cable is connected to the contact strip in control unit, all four fuses on the PCB may be blown.

Note:
Only technicians certified by Sartorius to work on explosion-protected equipment may replace original fuses with an explosion protection rating. Because of the different amperages, it is very important to make sure that fuses are in the right position and that they have the right strength.



Error Codes and Messages

Error codes are displayed in the main display or text line for 2 seconds.
The program then returns automatically to the weighing mode.

Error Code/Message Displayed	Cause	Solution
No segments appear on the display	No AC power is available	Check the AC power supply
	The AC adapter is not plugged in	Plug in the AC adapter
	Automatic shutoff configured in Setup	Press I/⏻ to switch on the scale or select "automatic shutoff – off" in the Setup menu
H	The load exceeds the scale capacity	Unload the scale
L or Err 54	The weighing pan is not in place	Place the weighing pan on the scale
Err 01 > Display range	Data output not compatible with output format	Change the configuration in the Setup menu
Err 02 Cal. n. possible	Calibration/adjustment condition not met, e.g., – The scale was not tared – The scale is loaded	Calibrate only when zero is displayed Press t to tare Unload the scale
Err 03 Cal./adj. interrupt	Calibration/adjustment could not be completed within a certain time	Allow the scale to warm up again and repeat the adjustment process
Err 07 Function blocked	Function not allowed in scales verified for use in legal metrology	Contact your local Sartorius Service Center for information on having the settings changed
Err 08* <> zero range	The load on the scale is too heavy to zero the readout	Check whether "tare/zero with power on" is set
Err 09* < 0 not allowed	Taring is not possible when the gross weight is ≤ zero	Zero the scale
Err 10 Tare fct. blocked	Tare key and 2nd tare memory are blocked when there is data in the tare memory for the formulation application Differential weighing: The tare key is blocked when a tare weight is stored for a specific sample	Press c to clear the formulation application; the tare key and 2nd tare memory are then accessible Differential weighing: Unload the scale or change to a different sample
Err 11 Tare2 blocked	Tare memory not allowed – Cannot load the sample tare weight – Total weight in the tare memory exceeds the capacity of the scale – Tare value exceeds the fine range of the verified scale	Check the tare value entered

* = occurs only when the SBI interface (ESC f3_/f4_) is used

Error Code/Message Displayed	Cause	Solution
Err 12 Tare2 > Max.	Tare memory greater than weighing capacity or range limits	Unload scale or use a different sample amount
Err 17 Adj.-wt. > Max.	Internal adjustment is not possible because preload is too heavy	Reduce the preload or change the configuration
Err 30 Print fct. blocked	Interface port for printer output is blocked	Contact your local Sartorius Service Center
Err 31 Print fct. blocked	Interface handshake interrupted (XOFF, CTS)	Transmit XON, then CTS
Function active	Function is being performed	–
Less than 999 samples can be saved in up to 100 lots	Product memory is full	Delete some of the data in the product memory
Err 10x x = **1** : x = **2** : x = **3** : x = **4** : "Checkerboard" pattern displayed continuously	Key is stuck Key pressed when switching on the scale: ⏥ (F1, F2, F5, F6), [CF] [⏲], ⏥ (F3), [0], [3], [4], [9] [2], [5], [6], [·], [⊙], [TARE]-right [1], [7], [8], ⏥ (F4), [ABC], [TARE]-left [SETUP] key was pressed when turning on the scale, or is stuck	Release key or contact your local Sartorius Service Center
Err 340	Operating parameter (EEPROM) is wrong	Turn the scale off, then back on again. If this error remains displayed, please contact your local Sartorius Service Center
Err 341	RAM lost data, Battery needs to be recharged	Leave the scale power on for at least 10 hrs.
Err 320	Operating program memory defective	Contact your local Sartorius Service Center
No WP	Weighing platform is defective	Contact your local Sartorius Service Center
blocked	Function blocked	None
The special code ◆ remains displayed	None of the keys has been pressed since the scale was turned on	Press a key
The weight readout changes constantly	Unstable ambient conditions	Set up the scale in another area
	Too much vibration, or the scale is exposed to a draft	Change Setup configurations to adapt the scale to the ambient conditions
	A foreign object is caught between the pan and the scale housing	Remove the foreign object
The weight readout is obviously wrong	The scale has not been calibrated/adjusted	Calibrate/adjust the scale
	The scale was not tared before weighing	Tare before weighing
	The scale is not level	Level the scale
Ref.wt. too light	Error in storing reference weight (with the counting or weighing-in-percent application)	Weight too light or there is no sample on the scale

Error Code/Message Displayed	Cause	Solution
Cannot update	Reference updating not possible (with the counting application)	See "Counting" in "Operating the Scale" for reference updating criteria
Not a number xxxxx **Too low** xxxxx **Too high**	Input wrong (with any application program), e.g., alphabetic input not allowed	Follow the instructions for the application programs
Too many char.	Input text too long	Allowable text lengths, incl. decimal point: – S ID, NUM, L ID, ID: max. 20 characters – W ID: max. 14 characters
Wrong line format	Configured printout, printout memory and 16-character format selected	Select the 22-character format:
Limits unequal for unit	Unit entered for tolerance limits in checkweighing different from the application used	Adjust tolerance limits
Equation too long	Equation exceeds 28 characters	Limit equation to 28 characters
Differential Weighing:		
SAMPLE: Confirm delete/ omit	"SAMPLE: delete/omit" prompt on display page for samples	Select **Yes** to delete Select **Omit** to omit
SAMPLE: Include	"SAMPLE: include" prompt on display page for samples	Select **Omit** to include a sample already omitted
Cannot store	File manager: – Not possible to save data – No available memory	Delete lot(s)
Cannot load	File manager: – Not possible to load data – Memory capacity limit reached	Delete lot(s)
Only 30 backweights possible	An attempt was made to save a 31st backweighing operation	None
LOT: already exists	Lot already exists on the display page for **LOTS**	Choose a different lot ID
No sample	The **Sample** key was pressed when the display page for **Lots** was shown, but there are no samples in the lot selected	Save sample first
Out of range	On the display page for **LOTS** or **SAMPLES**, an alphanumeric lot or samle ID was input and not found	Enter the correct lot or sample ID
Not enough memory space or **999 samples maximum**	An attempt was made to save more than 999 samples using the numeric keys and the **#Spl** key	Useless memory or delete one or more lots
Sample omitted	An attempt was made to save data from an omitted sample	None
Value too small to accept	An attempt was made to save a tare, initial or backweight that is less than one display digit	Place the particular weight on the scale
No choice available	**Factor** was selected while attempting to activate the display page for results	Selection not possible

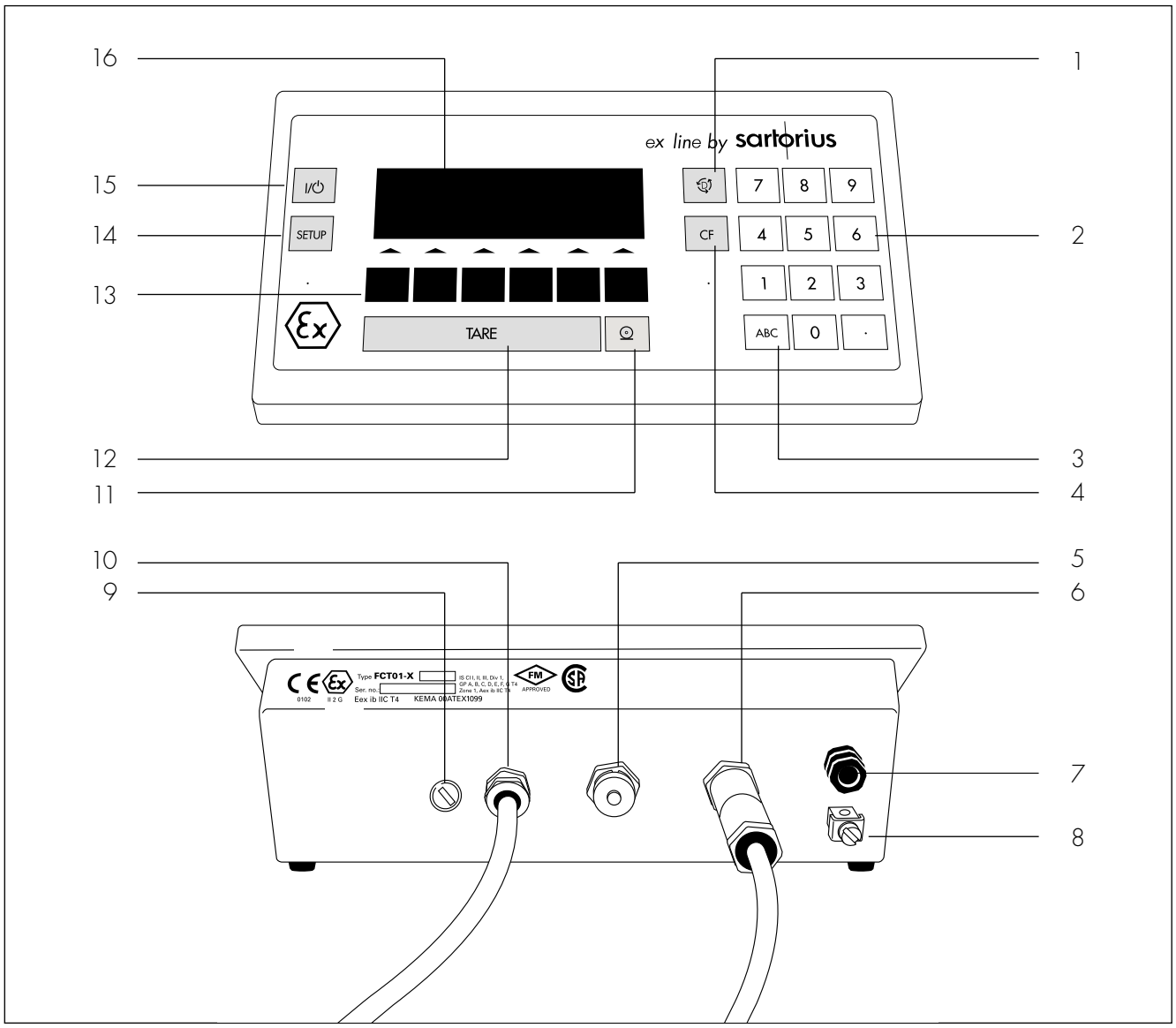
Error Code/Message Displayed	Cause	Solution
`CF not possible`	Only one sample or certain portions of a sample can be deleted by pressing the [CF] key. This message indicates that further delete functions are not possible.	Samples can be deleted one at a time on the display page for samples
`Calculated statistics`	Message output when statistics are being calculated. This process can take several seconds if there are many samples.	Goes out automatically
`No statistics available`	No valid backweights available in this lot	Goes out automatically
`No net initial wts. available`	In serial and combined weighing, no initial weights found	Measure initial weights

If any other errors occur, contact your local Sartorius Service Center!

Overview

General View of the Terminal

FCT01-X



Pos.	Designation
1	Toggle key for changing application programs
2	Numeric keys
3	Shift key for entering letters
4	CF key (clear function)
5	Serial communications port (14-pin)
6	Power jack
7	Vent valve
8	Terminal for an equipotential bonding conductor
9	Menu access switch

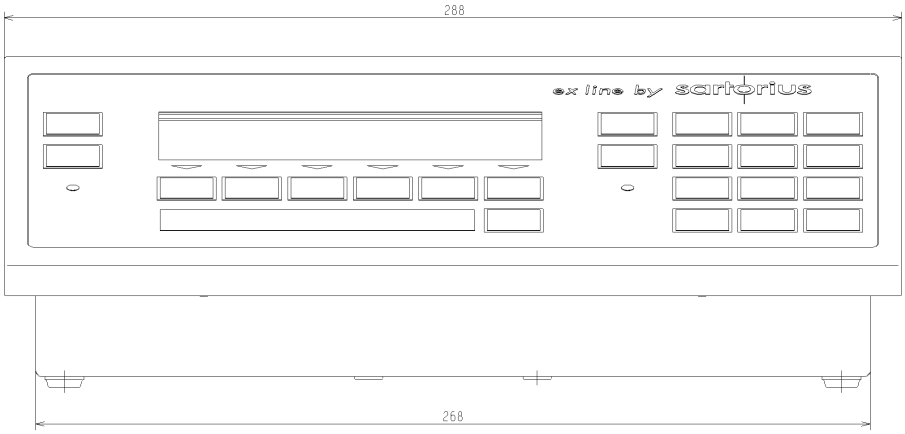
Pos.	Designation
10	Cable gland for connecting a weighing platform
11	Print key
12	Tare key
13	Function keys
14	Setup key
15	On/standby key
16	Display

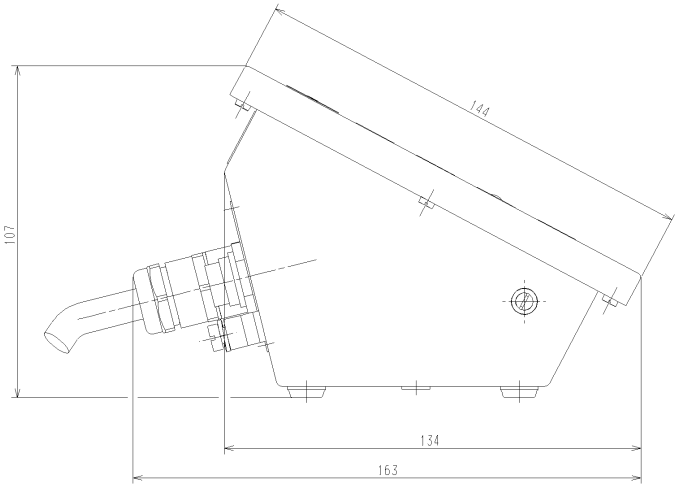
Specifications

Model		FCT01-X
Accuracy class		Ⓘ, Ⓘ or Ⓘ
Number of verification scale intervals for this module		
Single range Max/e	$n \leq$	6250
Multiple range Max_i/e_i	$n_i \leq$	6250
Multi-interval Max_i/e_i	$n_i \leq$	3100
	Max/e_1	15,500 (for multi-interval only)
Load cell supply voltage	V_{exc}	Amplitude 5.2 VDC Form: direct current (±2.6 VDC)
Input signal range (measurement voltage)	V_i	0.26 to 18.7 mV
Lowest permissible input signal		
for $P_{ind} = 0.5$	ΔV_{min}	≥ 0.416 µV/e
for $P_{ind} = 0.3$		≥ 0.693 µV/e
Weighing cell impedance range	$R_{L\ min}$	83 Ω
	$R_{L\ max}$	2000 Ω
Temperature range	T_{min}	0 °C (32°F)
	T_{max}	+40 °C (104°F)
Partial error of the electronic components for this module		
for $\Delta V_{min} \geq 0.416$ µV/e	pI	0.5
for $\Delta V_{min} \geq 0.693$ µV/e	pI	0.3
Load cell connection (sensor method)		6-wire system
Max. cable length per wire diameter	(L/D)	300 m/mm²
Specifications of built-in A/D converter: Weighing capacity		up to 32 t
Sensor circuit of the internal resistors	I_{max}	213 mA
Input voltage		minimum 0.05 mV/V maximum 3.6 mV/V
Analog input signal variation		minimum 0.5 mV/V maximum 3.3 mV/V minimum/verification scale interval (pi=0.5) 80 nV/V/e *
Preload (dead load)		maximum signal for dead load 0.7 mV/V minimum signal for dead load 0.05 mV/V
Cable for connecting load cells (example)		8 x 0.5 mm² : length ≤ 150 m, type LiYCY (resistance along entire length of one wire: < 13 ohms Shield: braided copper, solder-coated, 80% coverage)
Approval for use in EU including Great Britain		EEx ib IIC T4 II 2 G
Memory		battery-backed, 4 months
Net weight, approx.	kg	1.8
Dust and water protection rating according to EN60529		IP65
Use in hazardous areas/locations rated for		Zone 1 hazardous areas, Class I, Division 1 hazardous (classified) locations, and Category 3 (Zone 2) hazardous areas/locations
Power connection		using wide-range AC adapter for voltage ratings of 90 V to 264 V
Frequency	Hz	48 – 60 Hz
Power consumption	VA	25
Data transfer from hazardous area/location		through Zener barrier to YDI… terminals (see "Accessories")
Built-in interface		RS-232C via 14-contact round connector Format: 7 bit ASCII, 1 start bit, 1 or 2 stop bits Parity: odd, even or space Transmission rates: 150 to 19,200 baud Handshake: software or hardware

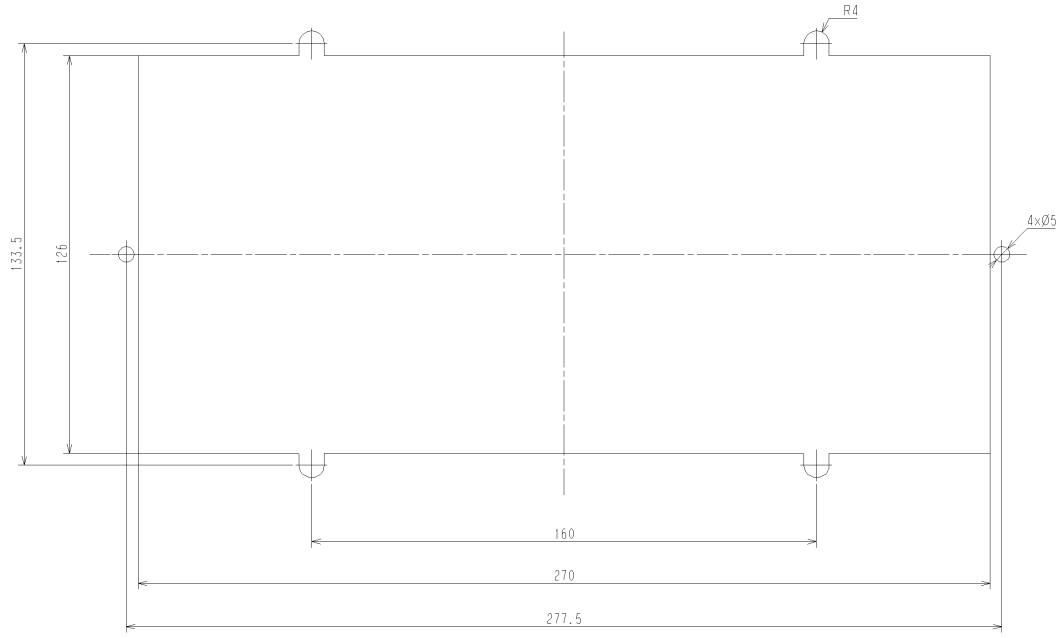
Dimensions (Terminal Drawings)

FCT01-X



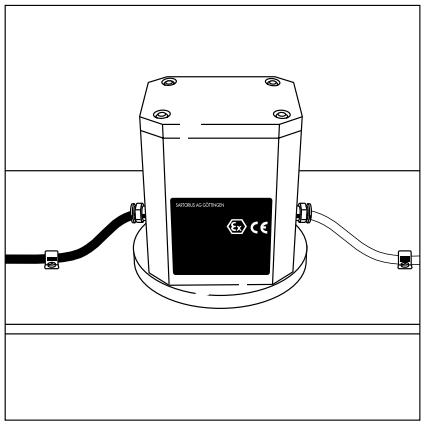
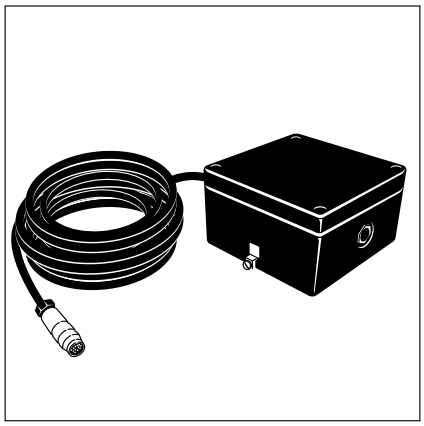


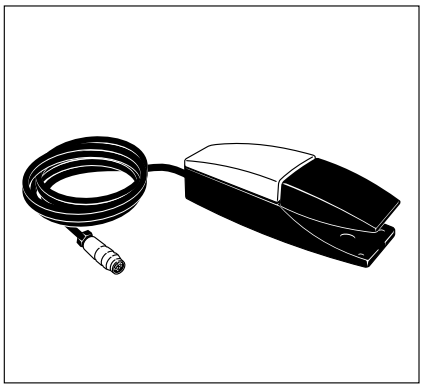
Installation dimensions:



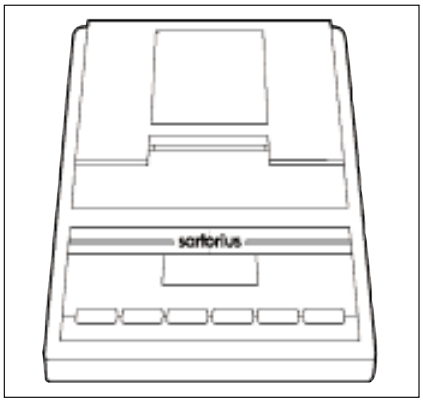
All dimensions are given in millimeters.

Accessories (Options)

Product	Order No.
Power supply (AC adapter) for use outside a hazardous area/location ⚠ Install the cable so that it is protected from damage. Connect the terminal of the housing to a terminal for equipotential bonding (PE=protective earthing or grounding conductor)!	YPS02-Z
 **Power supply (AC adapter) for use within a hazardous area/location** ⚠ Install the cable so that it is protected from damage. Connect the terminal of the housing to a terminal for equipotential bonding (PE=protective earthing or grounding conductor)!	YPS02-X
 **Zener barrier for use outside a hazardous area/location** – 4 data lines – 4 data lines and 4 control lines For connecting up to 8 terminals in a network: Interface with Zener barrier for use in a bus topology (2 RS-485 data lines in the safe area/location) ⚠ Install the cable so that it is protected from damage. Connect the terminal of the housing to a terminal for equipotential bonding (PE=protective earthing or grounding conductor)!	YDI02-Z YDI03-Z YDI01-Z
T-connector for hazardous areas/locations ⚠ Install the cable so that it is protected from damage.	YTE02-X



Product	Order No.
Foot switch for hazardous areas/locations (Choice of functions to emulate keys on the display and control unit: ⊙, TARE, ⟲, [isoTST], CF) ⚠ Install the cable so that it is protected from damage.	YPE05-X



Data printer For hard copies with the date, time, statistical evaluation, transaction counter; with an LCD Please note: only operable with an external AC adapter (can be connected to Zener barrier, YDI02-Z or YDI03-Z, using the YCC01-0016M3 adapter cable, or without the printer cable included, using the YCC01-0019M3 interface cable. Can be used in legal metrology in the EU Please note: For verified scales with e ≠ d, the last digit on the printout must be specially identified as shown on the scale display. Please set this parameter by accessing the printer menu (see the instruction manual for the printer)	YDP03-0CE

Data printer Strip and label printer with thermal print head; max. 104 mm paper width, connecting cable and external AC adapter.	YDP02IS-0CE
Extension cable 12-pin round male connector/12-pin round female connector (6m = 20 ft.)	YCC01-01ISM6
Interface cable for connecting a PC to the YDI03-Z Zener barrier	YCC01-03ISM5
Adapter cable, from 25-pin D-Submini female connector; length 0,25 m (.8 ft.)	6965619
RS-485 interface	YDO02FT-X
TTY/10mA interface (only in conjunction with interface converter 725324)	YDO01FT-X
Adjustable display holder (stainless steel) for wall mounting	YDH01F
Floor stand (stainless steel), height 1.1 m **plus adapter plate** for attachment of display holders	YDH03IS YAS01FCT-X

KEMA
REGISTERED QUALITY

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 00ATEX1012 X**

(4) Equipment or protective system: **Factory Series Electronic Weighing Terminal Type FCT01-X**

(5) Manufacturer: **Sartorius AG**

(6) Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA, notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 2001433.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1992 + prA1 **EN 50020 : 1994**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

(12) The marking of the equipment or protective system shall include the following:

Ex II 2 G **EEx ib IIC T4**

Arnhem, 1 May 2000
by order of the Board of Directors of N.V. KEMA

L.M.J. Vries
Certification Manager

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ACCREDITED BY
THE DUTCH COUNCIL
FOR ACCREDITATION

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 00ATEX1012 X**

(15) **Description**

Factory Series Electronic Weighing Terminal Type FCT01-X ..... is used for data handling and indication in a weighing system.

The unit is supplied by four certified intrinsically safe circuits.
The standard RS232 or the optional RS485 or TTY data communication circuits are connected via four certified active intrinsically safe circuits to peripheral equipment.

Of the other data communication circuits up to five may be connected to active intrinsically safe circuits and the remaining to passive simple intrinsically safe circuits.

The sensor output is for connection to any applicable types of load cells containing resistance only (considered as non-certified simple apparatus).
Optionally a potentiometer can be connected (connections 8 and 9 of LV1).
The temperature class of the load cells and the potentiometer have to be determined in accordance to Clause 5.4 of EN 50020:1992.

Ambient temperature range -20 °C ... +40 °C.

Electrical data

Supply circuit 1 ..... (ST8, pin 6 and 1) in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 12,6 V
I_i = 133 mA
P_i = 1,68 W

the effective internal capacitance and inductance are negligibly small.

Supply circuit 2 ..... (ST8, pin 4 and 2) in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 12,6 V
I_i = 133 mA
P_i = 1,68 W

the effective internal capacitance and inductance are negligibly small.

Supply circuit 3 ..... (ST8, pin 5 and 3) in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 8,6 V
I_i = 187 mA
P_i = 1,61 W

the effective internal capacitance C_i = 300 nF,
the effective internal inductance is negligibly small

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 00ATEX1012 X**

(15) **Electrical data** (continued)

Supply circuit 4 ..... (ST8, pin 7 and 8)

in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 12,6 V
I_i = 150 mA
P_i = 1,89 W

the effective internal capacitance C_i = 100 nF,
the effective internal inductance is negligibly small.

Data communication circuit ..... (BU9)

in type of explosion protection intrinsic safety EEx ib IIC, with following maximum values (circuits combined):

U_o = 7,9 V
I_o = 125 mA
P_o = 247 mW

The maximum allowed external capacitance C_o = 7,7 μF, the maximum allowed external inductance L_o = 2 mH.

Only for connection to a certified intrinsically safe circuit with the following maximum values:

<u>For units with RS232 circuit:</u>

Connections A/J/K/N and M (values for each circuit)

U_i = 12,6 V
I_i = 85 mA (resistively limited)
P_i = 270 mW

The effective internal capacitance C_i = 3 nF,
the effective internal inductance is negligibly small.

Connections C/D/E/F/G and M (values for each circuit)

U_i = 12,6 V
I_i = 10 mA (resistively limited)
P_i = 30 mW

The effective internal capacitance C_i = 4 nF,
the effective internal inductance is negligibly small.

Connections B/O: only for use in combination with passive intrinsically safe circuits.
The effective internal capacitance C_i = 4 nF,
the effective internal inductance is negligibly small.

<u>For units with RS485 circuit:</u>

Connections J/K/L and M (values for each circuit)

U_i = 12,6 V
I_i = 85 mA (resistively limited)
P_i = 270 mW

The effective internal capacitance C_i = 110 nF,
the effective internal inductance is negligibly small.

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 00ATEX1012 X**

(15) **Electrical data** (continued)

For units with RS485 circuit: (continued)
Connections C/D/E/F/G and M (values for each circuit)

U_i = 12,6 V
I_i = 10 mA (resistively limited)
P_i = 30 mW

The effective internal capacitance C_i = 4 nF,
the effective internal inductance is negligibly small.

Connections B/O: only for use in combination with passive intrinsically safe circuits.
The effective internal capacitance C_i = 4 nF,
the effective internal inductance is negligibly small.

For units with TTY circuit:

Connections G/K and D/F/J (values for each circuit)

U_i = 14,7 V
I_i = 50 mA (resistively limited)
P_i = 265 mW

The effective internal capacitance and inductance are negligibly small.

Connections C/E and D/F/J (values for each circuit)

U_i = 14,7 V
I_i = 130 mA (resistively limited)
P_i = 100 mW

The effective internal capacitance and inductance are negligibly small.

Alternatively the above mentioned circuits may be connected to the converter Type 725324, certified per Certificate of Conformity PTB No. Ex-85.B.2089.
For this combination the following data applies:
Maximum allowed external capacitance C_o = 620 nF,
maximum allowed external inductance L_o = 2 mH.

Sensor output circuit (LV1) ..... in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_o = 12,6 V
I_o = 375 mA
P_o = 2,4 W

The maximum allowed external capacitance C_o = 400 nF, the maximum allowed external inductance L_o = 200 μH.
For thermal protection, the sensor output current is limited to 213 mA.

(16) **Report**

KEMA No. 2001433

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 00ATEX1012 X**

(17) **Special conditions for safe use**

See (15) for ambient temperature range and electrical data.

(18) **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by standards listed at (9)	
Clause	Subject
1.05.	Marking
1.0.6 (b)	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

(19) **Test documentation**

1. The following drawings of EC-Type Examination Certificate KEMA 98ATEX0612 X:

		dated
	33956-550-90-A3 (3 sheets)	
	33956-550-95-A3	
	33956-550-01-A3 (2 sheets)	
	33956-560-90-A3 (4 sheets)	
	33956-560-95-A3 (2 sheets)	
	33956-560-01-A3 (2 sheets)	
	33956-190-90-A3	
	33956-190-95-A3	
	33956-190-01 A3 (2 sheets)	

2. Description (15 pages) — 02.02.2000

3. Drawing No.

33560-108-00-A3 Rev.00	23.04.1998
57001-917-51 Rev.00	15.06.1999
33956-191-00-A3 Rev.00	11.01.2000
65638-000-91-A3 Rev.00	)
65638-000-92-A3 Rev.00 (4 sheets)	)
65638-000-05-A3 Rev.00 (4 sheets)	)
65638-700-30-A3 Rev.00	)
65638-020-00-A3 Rev.00	)
65638-171-00-A3 Rev.00	)
33560-107-00-A3 Rev.00	)
65638-790-90-A3 Rev.00	) 02.02.2000
65538-130-90-A3 Rev.00 (10 sheets)	)
65538-130-95-A3 Rev.00	)
65538-130-01-A3 Rev.00 (4 sheets)	)
65538-110-90-A3 Rev.00	)
33956-140-90-A3 Rev.01	)
33956-140-95-A3 Rev.01	)
33956-140-01-A3 Rev.01 (2 sheets)	)

4. Samples

KEMA

AMENDMENT 1

EC-Type Examination Certificate KEMA 00ATEX1012 X

Manufacturer: **Sartorius AG**

Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

Description

The Factory Series Electronic Weighing Terminal Model FCT01-X is expanded by Model FCT01-XV1.

Electrical data

For thermal protection, the current in the sensor output circuit of Model FCT01-XV1 is limited to 106 mA.

All other data remain unchanged.

Test documentation

	dated
1. Description (1 page)	11.04.2001

Arnhem, 18 May 2001
by order of the Board of Directors of N.V. KEMA

L.M.J. Vries
Certification Manager

Code: Ex II 2 G EEx ib IIC T4 [2007075]

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AMENDMENT 2

to EC-Type Examination Certificate KEMA 00ATEX1012 X

Manufacturer: **Sartorius AG**

Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

Description

In future the Factory Series Electronic Weighing Terminal Type FCT01-X..... and Type FCT01-XV1 may also be constructed in accordance with the documentation listed below.

The marking for this version becomes

⟨Ex⟩ II 2 G EEx ib IIC T4 and ⟨Ex⟩ II 1 D T 135 °C

Item (18) is amended with

Essential Health and Safety Requirements not covered by the standards listed at (9)	
Clause	Subject
2.2.2.2. and 2.2.2.4	Explosive atmospheres caused by air/dust mixtures

These Essential Health and Safety Requirements are examined and positively judged.

The maximum surface temperature T 135 °C of the enclosure is based on an ambient temperature of 40 °C.

Electrical data

Supply circuit 1 ..... (ST8, pin 6 and 1)
in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 12,6 V
I_i = 133 mA
P_i = 1,46 W

The effective internal capacitance C_i and the effective internal inductance L_i are negligibly small.

Supply circuit 2 (ST8, pin 4 and 2)
in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_i = 12,6 V
I_i = 133 mA
P_i = 1,46 W

The effective internal capacitance C_i and the effective internal inductance L_i are negligibly small.

Data output circuit for units with RS485 circuit ..... (BU9)
in type of explosion protection intrinsic safety EEx ib IIC, with the following maximum values:

U_o = 12,6 V
I_o = 85 mA
P_o = 270 mW

The maximum allowed external capacitance C_o = 1,15 uF, the maximum allowed external inductance L_o = 5 mH.

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AMENDMENT 2

to EC-Type Examination Certificate KEMA 00ATEX1012 X

Electrical data (continued)

Only for connection to a certified intrinsically safe circuit, with following maximum values.

Connections J/K:

U_i = 12,6 V (each line to earth)
I_i = 810 mA (resistive limited)
P_i = 2,5 W

The effective internal capacitance C_i = 10 nF, the effective internal inductance L_i is negligibly small.

Connections D/E/F/G & M (values for each circuit):

U_i = 12,6 V
I_i = 10 mA (resistive limited)
P_i = 30 mW

The effective internal capacitance C_i = 4nF, the effective internal inductance is negligibly small.

Connections B/C/O/L are only for use in combination with passive intrinsically safe circuits, the effective internal capacitance C_i = 4 nF, the effective internal inductance L_i is negligibly small.

Sensor output circuit ..... (LV1)

in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

U_o = 12,6 V
I_o = 304 mA

For Type FCT01-X:

P_o = 1,96 W

For thermal protection, the sensor output current is limited to 213 mA.

For Type FCT01-XV1:

P_o = 1,34 W

For thermal protection, the sensor output current is limited to 106 mA.

For both Types:
The maximum allowed external capacitance C_o = 400 nF, the maximum allowed external inductance L_o = 230 μH.

All other data remain unchanged.

KEMA

AMENDMENT 2

to EC-Type Examination Certificate KEMA 00ATEX1012 X

Special conditions for safe use

1. For applications in explosive atmospheres caused by air/dust mixtures, the dust layer shall not exceed a thickness of 5 mm.
2. For ambient temperature range and electrical data see (15) and above.
3. Further the prior mentioned special conditions apply.

Test documentation

			dated
1.	Description		20.02.2001
2.	Drawing No.	65638-000-39-A4	10.10.2000
		65651-000-55-A3	25.09.2001
		65638-000-55-A3 (2 sheets)	11.09.2001
		65638-000-55-A3	11.09.2001
		98100-036-30 Rev.00	04.10.2000
		98100-036-31 Rev.00	04.10.2000
		65638-700-90-A4 Rev.00	06.10.2000
		65538-130-90-A3 Rev.01 (sheet 9)	02.02.2002
		33956-140-90-A3 Rev.02	02.02.2002

Arnhem, 11 April 2002
KEMA Quality B.V.

T. Pijpker
Certification Manager

[2018412]

KEMA

AMENDMENT 3

to EC-Type Examination Certificate KEMA 00ATEX1012 X

Manufacturer: **Sartorius AG**

Address: **Weender Landstraß 94-108, 37075 Göttingen, Germany**

Description

In future the Factory Ex-Terminal Type FCT01-X ..... may optionally be provided with an integral RS422 interface (type YDO03FT-X) and may also be constructed in accordance with the documentation listed below.

Electrical data

RS422 circuits ..... (ST1 pins 2 up to and incl. 9 and 1,10 for earth)

in type of protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with following maximum values (circuits combined):

U_i = 7,5 V
I_i = 0,5 A (linear)
P_i = 0,9 W
C_i = 5,5 µF
L_i = 2 µH

and
in type of protection intrinsic safety EEx ib IIC or EEx ib IIB, with the following maximum values (circuits combined):

U_o = 12,6 V
I_o = 180 mA
P_o = 0,57 W

	IIC	IIB
C_o	1,15 µF	7,4 µF
L_o	0,7 mH	4 mH
L_o/R_o	62 µH/Ohm	250 µH/Ohm

All other data remain unchanged

Test documentation

	dated
As listed in document 33956-180-45-A4	25.08.2005

Arnhem, 8 September 2005
KEMA Quality B.V.

C.G. van Es
Certification Manager

[2085321]

Page 1/1

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KEMA
REGISTERED QUALITY

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 98ATEX0892 X**

(4) Equipment or protective system: **Power Supply Type YPS02-X..**

(5) Manufacturer: **Sartorius AG**

(6) Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA, notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 80892.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1992 + prA1 EN 50018 : 1994 EN 50020 : 1994

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

(12) The marking of the equipment or protective system shall include the following:

Ex II 2 (2) G EEx d [ib] IIC T4

Arnhem, 15 June 1998
by order of the Board of Directors of N.V. KEMA

C.M. Boschloo
Certification Manager

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ACCREDITED BY
THE DUTCH COUNCIL
FOR ACCREDITATION

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0892 X**

(15) **Description**

The Power Supply Type YPS02-X.. provides four independent intrinsically safe output channels for intrinsic safe scales. The power supply is mounted in an enclosure in type of protection flameproof enclosure "d". The maximum length of the interconnection cable type LiYC-Y-CY 4x0.5 between the Power Supply and the scales is 50 m.

Ambient temperature range 0 °C ... +40 °C.

Electrical data

Main supply ..... non intrinsically safe circuit, suitable for connection to electrical equipment with working voltages up to 264 V.

Supply and input circuit ..... terminal (V_1, white) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 133 mA
P_o = 1,68 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_2, brown) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 133 mA
P_o = 1,68 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_3, green) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 8,6 V
I_o = 187 mA
P_o = 1,61 W

Maximum allowed external capacitance C_o = 4 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_4, yellow) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 150 mA
P_o = 1,89 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0892 X**

(15) **Electrical data** (continued)

Cable type LiYC-Y-CY 4x0.5 ..... Maximum cable capacitance C_{cable} = 28,2 nF
Maximum cable inductance L_{cable} = 8,4 μH
Maximum allowed cable length = 50 m

The intrinsically safe circuits are infallible galvanically isolated from the non-intrinsically safe circuits up to a sum of peak voltages of 375 V.

Installation instruction

The Power Supply provided with certified cables entries Type ADE can only be used for fixed installation. Certified cable entries Type AGRO can be used for flexible- and for fixed installation.

Routine tests

The transformer shall, before mounting into the apparatus, withstand per Clause 8.1.5 of EN 50 020 - 1994 without breakdown the application of 2500 V between the primary and secondary winding.

Routine tests according to Clause 16 of EN 50018 are not required since the type test has been made at a static pressure of four times the reference pressure.

(16) **Report**

KEMA No. 80892

(17) **Special conditions for safe use**

None

(18) **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by standards listed at (9)	
Clause	Subject
1.0.6	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0892 X**

(19) **Test documentation**

1. EC-Type Examination Certificate PTB 98ATEX1023 U
   KEMA 98ATEX0611 X
   Certificate of Conformity ISSeP 92.C.103.997
   LCIE 92.C6125 X

   signed

2. Description 65473-000-06-A4,
   Rev. 00 (11 pages) 05.05.1998

3. Drawing No. 65473-700-06-A4)
   65473-000-33-A3) 05.05.1998
   65473-700-05-A3)

   65473-000-05-A2 02.02.1998

   65473-120-90-A3)
   65473-120-95-A3) 09.01.1998
   65473-120-01)

4. Samples

KEMA

AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX0892 X

Manufacturer: **Sartorius AG**
Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

Description

In future the Power Supply Type YPS02-X.. is alternatively also constructed in accordance with EN 50281-1-1:1998 and the documentation listed below.

The marking for this version becomes

⟨Ex⟩ II 2 G EEx d[ib] IIC T4 and ⟨Ex⟩ 1 D T 135 °C

The maximum surface temperature T 135 °C of the enclosure is based on an ambient temperature of 40 °C.

Electrical Data

The value of the maximum power of each supply and input circuit changes as follows:

Terminal V_1, white	:	P_o = 1,46 W
Terminal V_2, brown	:	P_o = 1,46 W
Terminal V_3, green	:	P_o = 1,51 W
Terminal V_4, yellow	:	P_o = 1,68 W

All other data remain unchanged

Installation instructions

1. For use in potentially explosive atmospheres caused by the presence of flammable gases, fluids or vapours: The cable entry devices shall be of a certified flameproof type, suitable for the conditions of use and correctly installed.
2. For use in potentially explosive atmospheres caused by the presence of combustible dust: The cable entry devices shall be of a certified flameproof type, suitable for the conditions of use and correctly installed. The minimum ingress protection requirement of IP6X according to EN 60529 must be satisfied.
3. With the use of conduit entries a sealing device shall be provided either in the flameproof enclosure or immediately on the entrance thereto. The sealing device shall be of a certified flameproof type, suitable for the conditions of use and correctly installed.

Special conditions for safe use

1. For applications in explosive atmospheres caused by air/dust mixtures, the dust layer shall not exceed a thickness of 5 mm.
2. For ambient temperature range and electrical data see (15) and above.

Test documentation		dated
1. Drawing No.	65473-000-36-A4	10.10.2000

Arnhem, 11 April 2002
KEMA Quality B.V.

T. Pijpker
Certification Manager

[2018412]

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KEMA
REGISTERED QUALITY

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 98ATEX0611 X**

(4) Equipment or protective system: **Power Supply Type YPS02-Z..**

(5) Manufacturer: **Sartorius AG**

(6) Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA, notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 80611.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1992 + prA1 **EN 50020 : 1994**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

(12) The marking of the equipment or protective system shall include the following:

Ex II (2) G [EEx ib] IIC

Arnhem, 18 May 1998
by order of the Board of Directors of N.V. KEMA

C.M. Boschloo
Certification Manager

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N.V. KEMA
Utrechtseweg 310, 6812 AR Arnhem
P.O. Box 9035, 6800 ET Arnhem, The Netherlands
Telephone +31 26 3 56 27 46, Telefax +31 26 3 51 01 78

ACCREDITED BY
THE DUTCH COUNCIL
FOR ACCREDITATION

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0611 X**

(15) **Description**

The Power Supply Type YPS02-Z.. provides four independent intrinsically safe output channels for intrinsically safe scales. The Power Supply Type YPS02-Z.. is mounted in an enclosure providing a degree of ingress protection of IP 54. The maximum length of the interconnection cable
type LiYC-Y-CY 4 * 0.5 between the Power Supply and the scales is 50 m.

Ambient temperature range 0 °C ... +40 °C.

Electrical data

Main supply ..... non intrinsically safe circuit, suitable for connection to electrical equipment with working voltages up to 264 V.

Supply and input circuit ..... terminal (V_1, white) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 133 mA
P_o = 1,68 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_2, brown) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 133 mA
P_o = 1,68 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_3, green) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 8,6 V
I_o = 187 mA
P_o = 1,61 W

Maximum allowed external capacitance C_o = 4 μF
Maximum allowed external inductance L_o = 300 μH

Supply and input circuit ..... terminal (V_4, yellow) in type of explosion protection intrinsic safety EEx ib IIC with following maximum values:

U_o = 12,6 V
I_o = 150 mA
P_o = 1,89 W

Maximum allowed external capacitance C_o = 1 μF
Maximum allowed external inductance L_o = 300 μH

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0611 X**

(15) **Electrical data** (continued)

cable type LiYC-Y-CY 4 * 0.5 ..... Maximum cable capacitance C_{cable} = 28,2 nF
Maximum cable inductance L_{cable} = 8,4 μH
Maximum allowed cable length = 50 m

The intrinsically safe circuits are infallible galvanically isolated from the non-intrinsically safe circuits up to a sum of peak voltages of 375 V.

Installation instructions

The Power Supply Type YPS02-Z.. must be installed outside the hazardous area.

After installation of the Power Supply, all applicable separations shall meet the requirements per Clause 6.4 of EN 50 020 - 1994.

Inside the hazardous area, the power supply must be mounted in an enclosure which is suitable for this purpose. This combination shall be seperately investigated and certified.

Routine test

The transformer shall, before mounting into the apparatus, withstand per Clause 8.1.5 of EN 50 020 - 1994 without breakdown the application of 2500 V between the primary and secondary winding.

(16) **Report**

KEMA No. 80611

(17) **Special conditions for safe use**

None

(18) **Essential Health and Safety Requirements**

Essential Health and Safety Requirements not covered by standards listed at (9)	
Clause	Subject
1.0.6 b	Instructions

These Essential Health and Safety Requirements are examined and positively judged. The results are laid down in the report listed at (16).

KEMA

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 98ATEX0611 X**

(19) **Test documentation**

1. Certificate of Conformity KEMA No. Ex-97.D.1279 X

	signed
2. Product Compliance Report ANNEX II, 65463-700-70-A4, Rev. 00	24.03.1998
3. Drawing No. 65463-000-34-A3	03.03.1998
4. Samples	

KEMA

AMENDMENT 1

to EC-Type Examination Certificate KEMA 98ATEX0611 X

Manufacturer: **Sartorius AG**

Address: **Weender Landstraße 94-108, 37075 Göttingen, Germany**

Description

In future the Power Supply Type YPS02-Z.. may also be constructed in accordance with the documentation listed below.

The marking becomes ⟨Ex⟩ II (2) G (1) D [EEx ib] IIC

Item (18) is amended with

Essential Health and Safety Requirements not covered by the standards listed at (9)	
Clause	Subject
2.2.2.2. and 2.2.2.4	Explosive atmospheres caused by air/dust mixtures

These Essential Health and Safety Requirements are examined and positively judged.

Electrical Data

The value of the maximum power of each supply and input circuit changes as follows:

Terminal V_1, white : P_o = 1,46 W
Terminal V_2, brown : P_o = 1,46 W
Terminal V_3, green : P_o = 1,51 W
Terminal V_4, yellow : P_o = 1,68 W

All other data remain unchanged

Test documentation

		dated
1. Drawing No.	65463-000-38-A4	10.10.2000

Arnhem, 11 April 2002
KEMA Quality B.V.

T. Pijpker
Certification Manager

[2018412]

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Declaration of Conformity

The EU Mark of Conformity on Sartorius Weighing Equipment

In 1985, the Council of the European Community approved a resolution concerning a new approach to the technical harmonization and standardization of national regulations. The organization for monitoring compliance with the directives and standards concerning the CE marking is governed in the individual EU Member States through the implementation of the EC Directives adopted by the respective national laws. As of December 1993, the scope of validity for all EC Directives has been extended to the Member States of the European Union and the Signatories of the Agreement on the European Economic Area.

Sartorius complies with the EC Directives and European Standards in order to supply its customers with weighing instruments and related equipment that feature the latest advanced technology and provide many years of trouble-free service.

The CE mark may be affixed only to weighing instruments and associated equipment that comply with the applicable Directive(s):

Council Directive 89/336/EEC "Electromagnetic compatibility (EMC)"

Acceptable European Standards:

Limitation of emissions:
EN 50081-1
Residential, commercial and light industry

EN 50081-2
Industrial environment

Defined immunity to interference:

EN 50082-1
Residential, commercial and light industry

EN 50082-2
Industrial environment

Important Note:
The operator shall be responsible for any modifications to Sartorius equipment and for any connections of cables or equipment not supplied by Sartorius and must check and, if necessary, correct these modifications and connections. On request, Sartorius will provide information on the minimum operating specifications (in accordance with the Standards listed above for defined immunity to interference).

94/9/EC "Equipment or protective system intended for use in potentially explosive atmospheres"

Applicable European Standards for Electrical apparatus for potentially explosive atmospheres:

EN 50014 General requirements

EN 50018 Flameproof enclosure "d"

EN 50020 Intrinsic safety "i"

(see the EC Type-Approval Certificates, starting on the next page)

The IWA, IU and IF Series weighing platforms from Sartorius are rated for use in conjunction with the FCT01-X in Category 2 and 3 hazardous areas/locations as defined in Directive 94/9/EU (Zones 1 and 2 as defined in DIN EN60079-14, VDE 0165 Part 1) within the scope of the EC type-approval certificate for the FCT01-X. These platforms meet the specifications in Item 5.4 of the EN 50020/1994 standard. Sartorius AG has tested this equipment and declares that when used in conjunction with the FCT01-X these platforms fulfill the relevant requirements set forth for equipment designated EEx ib IIC T4 or II 2 G. This does not necessarily apply to a platform that is connected to other intrinsically safe equipment.

73/23/EEC "Electrical equipment designed for use within certain voltage limits"

Applicable European Standards:

EN 563
Safety of machinery – temperatures of touchable surfaces

EN 60950
Safety of information technology equipment including electrical business equipment

EN 61010
Safety requirements for electrical equipment for measurement, control and laboratory use
Part 1:
General requirements
Part 2-010:
Particular requirements for laboratory equipment for the heating of materials

If you use electrical equipment in installations and under ambient conditions requiring higher safety standards, you must comply with the provisions as specified in the applicable regulations for installation in your country.

Weighing Instruments for Use in Legal Metrology: Council Directive 90/384/EEC "Non-automatic weighing instruments"

This Directive regulates the determination of mass in legal metrology.

For the respective Declaration of Type Conformity for weighing instruments that have been verified by Sartorius for use as legal measuring instruments and that have an EC Type-Approval Certificate, see the operating instructions for the weighing platform you use, or the "Guide to Verification of Weighing Instruments".

This Directive also regulates the performance of the EC verification by the manufacturer, provided that an EC Type-Approval Certificate has been issued and the manufacturer has been accredited by an officer of a Notified Body registered at the Commission of the European Community for performing such verification.

Sartorius complies with EC Directive No. 90/384/EEC for non-automatic weighing instruments, which has been in effect since January 1, 1993, within the Single European Market, as well as the accreditation of the Quality Management System of Sartorius AG by Lower Saxony's Regional Administrative Department of Legal Metrology (Niedersächsisches Landesverwaltungsamt – Eichwesen) from February 15, 1993.

For additional information on the CE mark on Sartorius equipment, see Sartorius Publication No. W--0052-e93081.

"EC Verification" – A Service offered by Sartorius

Our service technicians authorized to perform the verification of your weighing instruments that are acceptable for legal metrological verification can inspect and verify the metrological specifications at the place of installation within the Member States of the European Union and the Signatories of the Agreement on the European Economic Area.

Subsequent Verifications within the European Countries

The validity of the verification will become void in accordance with the national regulations of the country in which the weighing instrument is used. For information on verification and legal regulations currently applicable in your country, and to obtain the names of the persons to contact, please contact your local Sartorius office, dealer or service center.

CE

Konformitätserklärung zur Richtlinie 90/384/EWG

Declaration of Conformity of Type to Council Directive 90/384/EEC

nichtselbsttätige elektromechanische Waagen
nonautomatic electromechanical weighing instruments

(Alle Daten sind in den Prüfberichten, Bauartzulassungen oder den betroffenen Geräten selbst zu entnehmen)
(All data to be taken from test certificates, type-approval certificates, or instruments in question)

Auswerte-gerät *Indicator*	Typ Auswertegerät *Indicator type*	Typ Waage *Weighing instrument type*	Genauigkeits-klasse *Accuracy class*	EG-Bauart-zulassung Nr. *EC type approval no.*	Prüfschein Nr. Auswertegerät *Indicator test certificate no.*
FCT01-X	FCT01-X	SARTICS	(III) (IIII)	D04-09-015	D09-03.29
FCT01-XV1	FCT01-X	SARTICS	(III) (IIII)	D04-09-015	D09-03.29
SECT01	FCT01-X	SARTICS	(III) (IIII)	D04-09-015	D09-03.29

Elektromechanische Waage
Die Konformitätserklärung gilt, wenn:

- das Auswertgerät als unverändertes Originalmodul verwendet wird.
- die Kompatibilität der Module über das mitgelieferte Programm "KOMPMOD.xls" bestätigt und vom Waagenbauer unterschrieben wurde.
- eine Benannte Stelle der EU geprüft und in einer Konformitätsbescheinigung bestätigt hat:
  * die Übereinstimmung der im Formular (Programm) gemachten Angaben mit Waage und EG-Bauartzulassung.
  * die Richtigkeit der Aufschriften auf dem Kennzeichnungsschild
  * die Prüfung der Waage nach EN 45501 Punkt 8.2
- die Benannte Stelle das Kennzeichnungsschild mit der grünen Klebemarke mit dem Messtechnik-M und ihrer Nummer ausgerüstet und die in der EG-Bauartzulassung geforderten Stellen mit ihren Sicherungsmarken verschlossen hat.

Electromechanical weighing instrument
The Declaration of EC Conformity of Type applies if:

- *The indicator is used as an unchanged original module*
- *The Compatibility of Modules is confirmed by the delivered program "COMPMOD.xls" and signed by the scale assembler*
- *A Notified Body of the EU has tested and confirmed the following in its own Certificate of Conformity:*
  * *the information and specifications on the form (program) conform to those of the weighing instrument and on the EC type-approval certificate*
  * *the marking on the descriptive plate is correct*
  * *the weighing instrument was tested in conformance to EN 45501, section 8.2*
- *The Notified Body has affixed the green sticker with the metrology mark "M" and its number to the descriptive plate, and sealed the positions in accordance with the EC type-approval certificate using the Notified Body's protective marks.*

Sartorius AG
37070 Göttingen, Deutschland / *Germany*
Göttingen, 01.11.2004

Dr. G. Maaz
(Spartenleitung Mechatronik)
(President of the Mechatronics Division)

i. V. J. Rehwald
(Leitung Produktion Mechatronik / Wägetechnik)
(Head of the Production Department Mechatronics / Weighing Technology Division)

OAW-113-2/02.96
P108dee02.doc

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

PTB

EG-Bauartzulassung

EC type-approval certificate

Zulassungsinhaber: *Issued to:*	Sartorius AG Weender Landstr. 94-108 37075 Göttingen
Rechtsbezug: *In accordance with:*	§ 13 des Gesetzes über das Mess- und Eichwesen *(verification act)* vom/*dated* 23. März 1992 (BGBl. I S. 711), zuletzt geändert am *(last amended on)* 25.11.2003 (BGBl. I S. 2304), in Verbindung mit Richtlinie *(in connection with council directive)* 90/384/EWG, geändert durch *(amended by)* 93/68/EWG
Bauart: *In respect of:*	Nichtselbsttätige elektromechanische Waage mit oder ohne Hebelwerk *Nonautomatic electromechanical weighing instrument with or without lever system*
Typ / *Type*:	SARTICS
	Max 0,5 kg ... 300 t — Option: Mehrbereichs- und Mehrteilungswaage *multi-interval and multiple range instrument* (III) n ≤ 6250 (IIII) n ≤ 1000
Zulassungsnummer: *Approval number:*	**D04-09-015 1. Revision**
Gültig bis: *Valid until:*	07.04.2014
Anzahl der Seiten: *Number of pages:*	12
Geschäftszeichen: *Reference No.:*	PTB-1.12-4014622
Benannte Stelle: *Notified Body:*	0102

Im Auftrag
By order

Marcus Link

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 40

Braunschweig, 18.10.2004

Siegel
Seal

R3-0023

Die Hauptmerkmale, Zulassungsbedingungen und Auflagen sind in der Anlage enthalten, die Bestandteil der Revision der EG-Bauartzulassung ist. Hinweise und eine Rechtsbehelfsbelehrung befinden sich auf der ersten Seite der Anlage

The principal characteristics, approval conditions and special conditions, if any, are set out in the Annex which forms an integral part of this Revision of the EC type-approval certificate. For notes and information on legal remedies, see first page of the Annex.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

Prüfschein

Test certificate

Ausgestellt für: *Issued to:*	Sartorius AG Postfach 32 43 37070 Göttingen Bundesrepublik Deutschland
Prüfgrundlage: *In accordance with:*	EN 45501 (1992), Nr. 8.1, WELMEC-Dokument 2.1 (Issue 2, 1998) EWG Richtlinie 90/384/EWG, OIML R 76-1 (1992)
Gegenstand: *Object:*	Auswertegerät *Indicator* Typ FCT01-X *Type FCT01-X*
Kennummer: *Serial number:*	----
Prüfscheinnummer: *Test certificate number:*	D09-03.29
Datum der Prüfung: *Date of Test:*	----
Anzahl der Seiten: *Number of pages:*	7
Geschäftszeichen: *Reference No.:*	1.14 - 03000312
Benannte Stelle: *Notified Body:*	0102

Im Auftrag
By order

Link

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 40

Braunschweig, 2003-07-08

Siegel
Seal

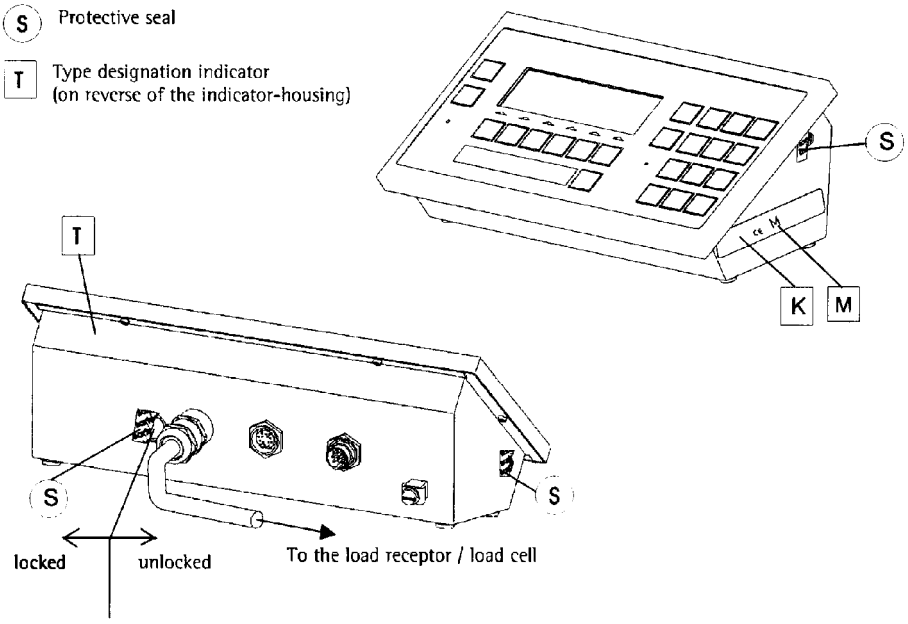
392 00 e

Hinweise siehe letzte Seite der Anlage, die Bestandteil des Prüfscheines ist.
For notes, see last page of the Annex which forms an integral part of the test certificate.

Plates and Markings FCT01-X, FCT01-XV1, SECT01 (all type FCT01-X)

(S) Protective seal

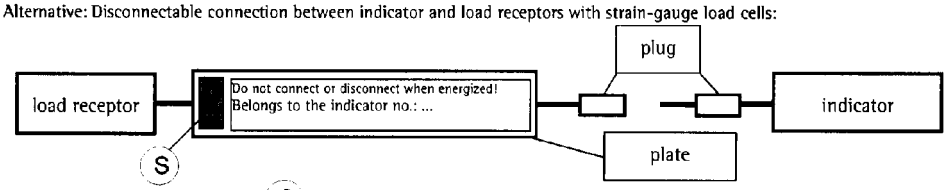
T Type designation indicator
(on reverse of the indicator-housing)

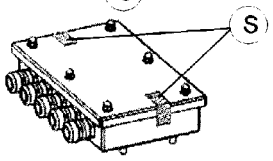


K Descriptive plate with CE mark

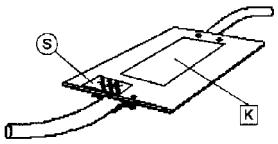
M Mark for EC verification (green M)

Alternative: Disconnectable connection between indicator and load receptors with strain-gauge load cells:





If there is a junction box between load receptor and electronic evaluation unit the junction box has to be secured against inadmissible manipulation.

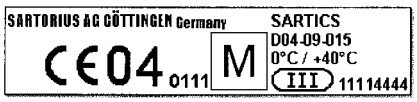


Alternative place for the Descriptive Plate of the weighing instrument
Handling in this case:
Affix the ID label of the weighing instrument to the delivered tag plate. Affix the ID tag plate to the data cable of the weighing module near the indicator. The verification officer or an authorized Sartorius representive must then seal the ID tag plate to the fastener.

PPFX011004e

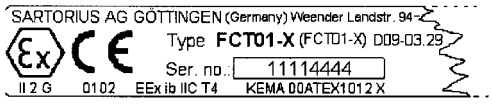
Type weighing instrument: SARTICS Type indicator: FCT01-X
EC type-approval certificate: D04-09-015 + Test certificate: D09-03.29

Example of descriptive plate on a weighing instrument already verified

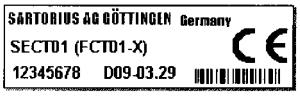


Examples of plates with model designation

FCT01-X, FCT01-XV1


SARTORIUS AG GÖTTINGEN (Germany) Weender Landstr. 94-
Type FCT01-X (FCT01-X) D09-03.29
Ser. no.: 11114444
II 2 G 0102 EEx ib IIC T4 KEMA 00ATEX1012 X

SECT01



PPFX011004e

Type weighing instrument: SARTICS Type indicator: FCT01-X
EC type-approval certificate: D04-09-015 + Test certificate: D09-03.29

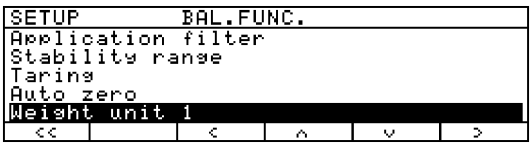
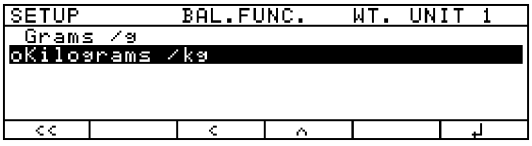
Notes on Checking Verification

To use this weighing instrument in legal metrology the setting "**Trade**" when the instrument is configured and the menu access switch subsequently returned to the "locked" position.
So that not all parameters relevant for verification are intercepted, the display of metrological data and the available weight units must be checked during the verification procedure.

Checking Metrological Data:

The metrological data Max , Min, e and d (d only on weighing instruments with e ≠ d) must be visible and correct on the display.

Checking availability of weight units:

Step	Press key(s) (or follow instructions)	Display/Output
1. Select Setup	SETUP	
2. Confirm "Balance/scale functions"	> soft key	
3. Select "Weight unit 1"	v soft key repeatedly	
4. Confirm "Weight unit 1"	> soft key	
5. Check whether only permissible units are available for selection.		

If units are available which are not permissible in legal metrology, open the menu access switch, put the weighing instrument in service mode, select "**Trade**" as weighing mode and remove the weight units that are not permitted. Make sure to return the menu access switch to "locked" position after completing these steps.

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Appendix: "Guide to Verification of Weighing Instruments"

Verification of Compatibility for Modules used with Non-automatic Weighing Instruments

The documents required to verify a weighing instrument for legal metrology can be created using the data, documents and programs available from the Sartorius website.

The printout of the completed forms is valid as a model for verification of the weighing instrument produced by the scale manufacturer. Once this has been properly completed and signed by the weighing instrument manufacturer, it is submitted to the weights and measures officer together with the Declaration of Conformity (under "Documents").

Information important to the weights and measures officer may include the type approval certificate or a test report. The test certificate and manufacturer information about the load cell or weigh cell are required.

Filling out the Verification of Compatibility:

- The Guide to Verification, complete with Excel file, documents and information, is available from Sartorius in the Internet at:
  http://www.sartorius.com/leitfaden_eichen/

○ If no Internet access is available:
Order the Guide to Verification of Weighing Instruments on CD-ROM from Sartorius at the following address:
Sartorius AG
Hotline Dept.
Weender Landstrasse 94–108
37075 Goettingen, Germany
Phone: +49(0)551.308.4440
Fax: +49.(0)551.308.4449
www.sartorius.com

- Select the desired language version by clicking on the title of the document. Select your display and operator terminal model at the top of the page.

Using the Program

ReadMe File

Read this file before you select your display and operator terminal series. The ReadMe file contains important information about using the Excel file and offers important tips on how to fill out the documents.

Documents

Once you select a display and operator terminal model, links to all required documents are shown on the left-hand side of the screen.

Getting Started

- Click on "Start the Excel Program" (depending on your settings, the "Download file" dialog might open; select "Open").

> The Excel file is automatically opened with the Excel program. You need to have an MS-Excel installation on your computer. A dialog box for selecting macros is opened.

- Click on the "Activate macros" button.

> Note: This window might not open, depending on the settings in your computer system.

- Input is required in all the "Data" fields (highlighted in yellow).

> An example of a completed form is stored in the "Documents" folder with explanations of the fields that are marked in yellow. Once the technical specifications provided by the manufacturer have been entered correctly, the program calculates all values automatically.

○ The fields should be filled out by an expert.
On the last page, the green or red fields show whether the components (display and operator terminal + load cell) are
compatible: Red = incompatible;
Green = compatible.

Note: Any manufacturer of weighing equipment who configures a weighing instrument from individual components (display and operator terminal + load cell(s)) is responsible for validity of the specifications in the corresponding documentation.

- Once all data has been entered correctly (all fields on the last page are green), print out both pages. The file can then be archived (for example, saved on your computer) under a name of your choice.

- Double-check the information and sign the data sheet.

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Copyright

This documentation may not be duplicated or transmitted for any purpose whatsoever, whether in whole or in part, without the express written permission of Sartorius AG. All rights defined under copyright law are reserved by Sartorius AG.

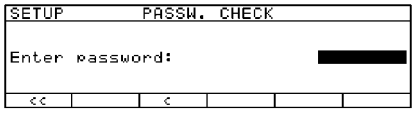
The program is intended for use by the purchaser only. Transfer to third parties, whether free of charge or in return for payment, is not permitted. The software may not be changed, reverse engineered, or modified through assimilation.

The Excel program used here was developed by the "German Association of Metrology and Verification" (Arbeitsgemeinschaft für Mess und Eichwesen (AGME)). It is also available as freeware on the Internet. The program is copyrighted and may not be modified.
Users shall be liable for the improper use of said software.

Entering the General Password

Enter/Change Password

- Select the Setup menu:
  Press the SETUP soft key
- > SETUP is displayed
- Select the device parameter:
  Press the v and > soft keys
- > The password prompt is displayed:



- ○ Enter the General Password (see below)
- ○ Confirm the password:
  Press the ↵ soft key
- > Parameters are displayed
- Select password setting:
  Press the v or ^ soft keys repeatedly and >, until
- > Password: is displayed, together with the current password setting
- Define a new password:
  Enter letters/numbers for the new password

  To delete the current password:
  Press the · key and store
- To confirm your entry:
  Press the ↵ soft key
- Exit the Setup menu:
  Press the << soft key
- > Restart your application

General Password: 40414243

Service Password: 202122

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given below. Sartorius AG reserves the right to
make changes to the technology, features,
specifications, and design of the equipment
without notice.

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